

IntraSwitch™ 5324

User's Manual

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you must correct the interference at your own expense.

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This IntraSwitch 5324 has a three-year warranty which applies to the original purchaser of the product. Asanté Technologies, Inc. warrants that this product will be free from defects in title, materials, and manufacturing workmanship during the warranty period. If the IntraSwitch is found to be defective, then, as your sole remedy and as the manufacturer's only responsibility, Asanté Technologies, Inc. will repair or replace the product provided that (1) you call Asanté Technologies, Inc. for a Returned Merchandise Authorization (RMA) number, that (2) you clearly write the RMA number on the outside of the package, and that (3) you return it, postage prepaid, during the warranty period. This warranty is exclusive and is limited to the IntraSwitch 5324. This warranty shall not apply to IntraSwitch products that have been subject to abuse, misuse, abnormal electrical or environmental conditions, or any condition other than what can be considered normal use.

Note: The warranty card must be filed with Asanté Technologies, Inc. within 30 days after the date of purchase.

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Preface

This section explains how to contact Asanté Technical Support. It also provides an overview of the manual's chapters, document conventions, and intended audience.

This chapter contains the following sections:

- o Contacting Technical Support — page xiv
- o Chapter Contents — page xv
- o Document Conventions — page xvi
- o Audience — page xvi

Asking for Assistance

Contacting Technical Support

To contact Asanté Technical Support:

Telephone:	(800) 622-7464
Fax:	(408) 432-6018
Fax-Back:	(800) 741-8607
Internet mail:	support@asante.com
World Wide Web site:	http://www.asante.com
Bulletin Board Service (BBS):	(408) 432-1416
ARA BBS (guest log in):	(408) 432-1416
AppleLink mail/BBS:	ASANTE
FTP Archive:	ftp.asante.com

Technical Support Hours

6:00 a.m. to 5:00 p.m. Pacific Standard Time, Monday-Friday

Manual Contents

This manual introduces the IntraSwitch 5324 Ethernet switch and describes its installation, configuration, troubleshooting, and available network management functions.

This manual is divided into the following chapters and appendices:

Chapter/Appendix	Description
1 Introduction	Describes the IntraSwitch 5324, its package contents, features, switching capacity, management options, and factory defaults.
2 Installation	Describes the steps required to install the IntraSwitch, connect it to the network, and configure it for management.
3 LED Indicators	Describes how to monitor the IntraSwitch's front panel LEDs.
4 Setting Up For Management	Describes the different management options available with the IntraSwitch and how to connect to the switch using those options.
5 Console Management	Describes how to perform some basic management functions using the IntraSwitch's Local Management Interface.
6 Status and Statistics	Describes how to view the IntraSwitch's current operating information and how to view statistics on each port.
7 Advanced Management	Describes how to use RMON to manage the IntraSwitch.
Appendix A, "Troubleshooting"	Provides some troubleshooting tips for isolating problems with the IntraSwitch or the network via the front panel LEDs.

Chapter/Appendix	Description
Appendix B, "Supported MIBs"	Provides a list and description of the MIBs supported by the IntraSwitch.
Appendix C, "Technical Specifications"	Provides a list of the IntraSwitch 5324's technical specifications.
Appendix D, "Management Menu Tree"	Provides a one-page map of the IntraSwitch's Local Management Interface.

Document Conventions

This manual uses the following conventions to convey instructions and information:

- o Commands and key words are in **boldface** font.

Note: Noteworthy information, which contains helpful suggestions or references to other sections in the manual, is in this format.
- S** Important: Significant information that calls attention to important features or instructions is in this format.

Audience

This manual uses terms and concepts associated with Ethernet networking and switches; it is recommended that the user of this manual have a basic working knowledge of local area networks (LANs).

1

Introduction

This chapter is an introduction to the IntraSwitch 5324. It provides an overview of the switch and describes its features, management and configuration capabilities, switching capacity, and factory default settings.

This chapter contains the following sections:

- IntraSwitch 5324 — page 1-2
- IntraSwitch Components — page 1-3
- Configuration/Management — page 1-4
- Switching Capacity — page 1-5
- Features — page 1-6
- Package Contents — page 1-7
- Tools and Materials — page 1-8
- Factory Defaults — page 1-9

IntraSwitch 5324

The Asanté IntraSwitch 5324 is a high-performance, manageable Ethernet switch that offers 24 10Base-T ports, one 10/100TX port, and two optional Media Independent Interface (MII) expansion slots.

The MII expansion slots allow for the addition of 10/100TX, 100Base-FX, or 10Base-FL connections. See page 2-13 for more details.

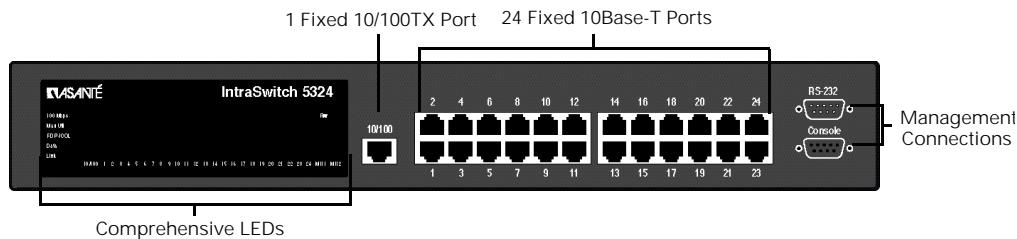


Figure 1-1 IntraSwitch 5324 front panel

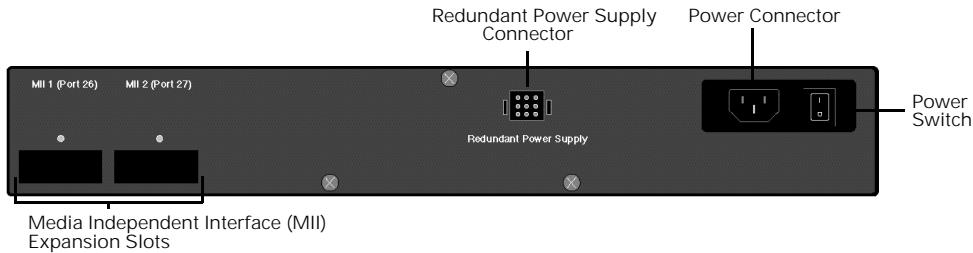


Figure 1-2 IntraSwitch 5324 back panel

IntraSwitch Components

10/100TX Port

The auto-negotiating 10/100TX port allows for the connection of a 10Base-T or a 100Base-T (Fast Ethernet) device. See “10/100TX Port” on page 2-7 for more information.

10Base-T Ports

The 24 fixed 10Base-T ports allow for the connection of 10Base-T Ethernet devices. See “10Base-T Ports” on page 2-7 for more information.

Management Connections

The Console port can be used for out-of-band management of the IntraSwitch. See “Out-of-Band Management” on page 4-4 for information.

MII Expansion Slots

The two Media Independent Interface (MII) expansion slots allow for the addition of various access modules, including: 10/100TX, 100Base-FX, or 10Base-FL. See “MII Ports” on page 2-8 for more information.

Redundant Power Supply Connector

The redundant power connection can be used to connect to an Asanté external RPSU 6000 redundant power supply (sold separately). The RPSU 6000 provides the IntraSwitch with power in the event that the switch’s main power connection fails. Refer to the RPSU 6000’s Installation Guide for more information or to Appendix C in this manual for part number information.

Power Switch

The power switch turns the IntraSwitch on or off. See “Connecting Power” on page 2-4 for instructions on powering on the IntraSwitch.

Power Supply Connector

The 5-volt power supply connector provides the IntraSwitch’s power connection. See Appendix C, “Technical Specifications” for more information.

Configuration/ Management

The IntraSwitch 5324 can be managed through standard out-of-band sessions through the Console port, via in-band Telnet sessions, or via any SNMP-based management software program (such as IntraSpection™).

Console/Telnet Management

The SNMP (Simple Network Management Protocol) is used to manage the IntraSwitch 5324. The SNMP agent supports database objects that are defined in the following Management Information Bases (MIBs):

- MIB II (RFC 1213)
- Bridge MIB (RFC 1493)
- RMON, 4 groups (RFC 1757)

The SNMP agent can be accessed via out-of-band Console connections or through in-band Telnet sessions. See Chapter 4, “Setting Up For Management,” for information on connecting via one of these two methods.

See Appendix B, “Supported MIBs” for more information on the MIBs supported by the IntraSwitch.

SNMP-Based Management

IntraSpection Web-based network management software, along with any other SNMP-based network management application, can be used to manage the IntraSwitch 5324. See Chapter 9, “SNMP-based Management” for more information.

Web Browser Management

In a future release of the switch’s software, the IntraSwitch will be capable of management via any standard World Wide Web browser.

Check Asanté’s World Wide Web site (<http://www.asante.com>) for the latest information on the IntraSwitch and its software releases.

Switching Capacity

Each 10Base-T port forwards Ethernet minimum-sized 64-byte packets at the maximum attainable rate of 14,880 packets per second (pps). The 10/100 port can forward 64-byte packets at 148,000pps.

The IntraSwitch 5324 fully supports the 802.1d transparent Ethernet bridging standard. IEEE 802.1d compliance provides automatic address learning, packet filtering, and the Spanning Tree Protocol.

Features

The IntraSwitch 5324 has the following features:

- 24 10Base-T switched ports with RJ-45 connectors
- One fixed 10/100TX port with an RJ-45 connector (supports NWay™ Auto-Negotiation)
- Two optional MII expansion slots for adding 10/100TX, 100Base-FX, or 10Base-FL ports
- Telnet (in-band) and Console (out-of-band) management
- 1024 MAC addresses
- Auto-Negotiation on 10/100 port and 10/100 MII expansion port(s)
- Full duplex support on all ports
- BootP support
- TFTP support for software upgrades
- RMON support (4 groups)
- MIB II, Bridge MIB support
- 802.1d SpanningTree support
- Store-and-forward switching mode
- Advanced diagnostic LEDs
- Future HTTP server (provides SNMP management via any common World Wide Web browser)

Package Contents

The IntraSwitch 5324 is shipped with the following items:

- o (1) IntraSwitch 5324 Ethernet switch
- o (2) rack-mounting brackets
- o (12) standard Phillips screws for attaching the brackets to the switch and mounting the switch to a rack
- o (4) rubber feet for desktop/free-standing placement
- o (1) power cord
- o (1) User's Manual (this book)
- o (1) Quick Installation Guide

S Important: If you are missing any of the above items, contact the dealer from whom you purchased your IntraSwitch.

Tools and Materials

Some tools and materials that are not supplied with the IntraSwitch 5324 are needed to connect the switch to an Ethernet network.

The table below lists the tools and materials required for connecting devices to the switch's ports, for installing an MII module, and for rack-mounting the switch.

S Important: For specific instructions on connecting network devices to the IntraSwitch, see “Connecting to the Network” on page 2-7.

Table 1-1 Tools and Materials Required

Action	Tool/Material Required
Connecting 10Base-T ports or 10/100 port	Standard Category 3, 4 or 5 UTP straight-through cable with RJ-45 connectors. Standard Category 5 UTP cross-over cable with RJ-45 connectors.
Connecting 100Base-FX port (optional MII expansion module)	Dual 62.5/125 micron graded-index multimode fiber optic cable fitted with an SC connector.
Connecting 10Base-FL port (optional MII expansion module with SC or ST connectors)	Dual 62.5/125 micron graded-index multimode fiber optic cable fitted with an SC connector. Dual 62.5/125 micron graded-index multimode fiber optic cable fitted with a dual ST connector.
Connecting to the Console port	Straight-through RS-232 cable with 9-pin male D-subminiature connector.
Removing MII expansion module's cover	Small Phillips screwdriver.
Rack-mounting the switch	Phillips screwdriver (#2) for mounting the two rack brackets on the unit.

Factory Defaults

The IntraSwitch 5324 is shipped with the following configuration default settings:

Table 1-2 Factory Default Configurations

Configuration	Default Setting
IP address	0.0.0.0 Important: The first IP address that is assigned to the IntraSwitch becomes the new factory default setting.
Subnet Mask	0.0.0.0 Important: The first subnet mask that is assigned to the IntraSwitch becomes the new factory default setting.
Default Gateway	0.0.0.0 Important: The first default gateway address that is assigned to the IntraSwitch becomes the new factory default setting.
Switching Mode	Store-and-forward
10Base-T Ports	Half Duplex
10/100TX Port and MII Expansion Ports	Auto-Negotiation
Spanning Tree	Enabled on ALL ports

S Important: When the switch is reset (powered off and then on), all settings are returned to the factory defaults listed above except for the IP Address, Subnet Mask, and Default Gateway; these items revert to the first addresses assigned to them.

2

Installation

This chapter explains how to power on the IntraSwitch, install it in an equipment rack, and connect it to your network. It also explains how to prepare the IntraSwitch for management capabilities and install MII expansion modules.

This chapter contains the following sections:

- o Installation Guidelines — page 2-2
- o Installation Overview — page 2-3
- o Connecting power — page 2-4
- o Rack mounting/desktop placement — page 2-5
- o Connecting to the network — page 2-7
- o Setting up for management — page 2-10
- o Installing MII modules — page 2-13

Installing the IntraSwitch

Installation Guidelines

Before installing the IntraSwitch 5324, carefully review the following guidelines.

Power Requirements

The source electrical outlet should be installed near the switch, be easily accessible, and be properly grounded.

Make sure the power source adheres to the following guidelines:

- o Voltage range: 100 to 240 VAC
- o Frequency range: 60/50 Hz
- o Maximum current: 1.6 A

Environmental Requirements

The IntraSwitch must be installed in a clean, dry, dust-free area with adequate air circulation to maintain the following environmental limits:

- o Temperature: 0° to 45° C
- o Relative Humidity: 5% to 85% non-condensing

Avoid direct sunlight, heat sources, or areas with high levels of electro-magnetic interference.

Cooling and Airflow

The IntraSwitch has two internal fans that cool the interior by drawing air through vents on the sides and forcing heated air out through holes in the rear.

S Important: Do not restrict air flow by covering or obstructing air vents on the sides of the case.

Installation Overview

The table below describes the steps needed to install the IntraSwitch 5324. The steps that are optional are labeled “optional”; the steps that are required are labeled “required.” The sections that follow explain each step in detail.

To install the IntraSwitch 5324:

Table 2-1 Installation Overview

Step	Action
1 (required)	Open the box and check the contents. See “Package Contents” on page 1-7 for a complete list of the items included with your IntraSwitch 5324.
2 (required)	Check the power connection. See “Connecting Power” on page 2-4.
3 (required)	Install the IntraSwitch in an equipment rack or prepare it for desktop placement. See “Rack Mounting/Desktop Placement” on page 2-5.
4 (required)	Connect the IntraStack to the network. See “Connecting to the Network” on page 2-7.
5 (optional)	Configure the IntraStack for management capabilities. See “Setting up for Management” on page 2-10.
6 (optional)	Install MII module(s), if any. See “Installing MII Modules” on page 2-13.

Connecting Power

To connect power to the IntraSwitch:

- 1 Plug one end of the supplied power cord into the power connector on the back of the unit.

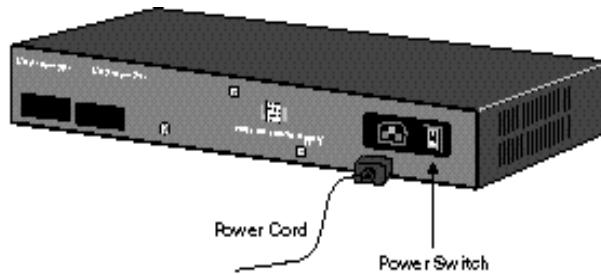


Figure 2-1 Connecting the power cord to the IntraSwitch

- 2 Plug the other end of the power cord into a grounded AC outlet.

Note: For more information about power and environmental requirements, see Appendix C, "Technical Specifications."

- 3 Turn the power switch to the "on" position. Make sure the IntraSwitch's front panel LEDs blink and the POWER LED lights and remains on.

S Important: If the power does not come on, refer to Appendix A, "Troubleshooting."

- 4 Turn the IntraSwitch's power off. The switch is ready be installed in an equipment rack or prepared for desktop placement. See the next section "Rack Mounting/Desktop Placement" on page 2-5.

Rack Mounting/ Desktop Placement

Equipment Rack Installation

The IntraSwitch can be installed in most standard 19-inch equipment racks. It can also be placed on a horizontal surface with support capabilities of 11 pounds (5 kilograms).

To install the IntraSwitch in an equipment rack:

- S** Important: Disconnect all cables from the switch before continuing.
- 1** Place the switch on a stable, flat surface.
- 2** Locate a rack bracket (supplied) and place it over the mounting holes on one side of the unit, as shown in Figure 2-2.

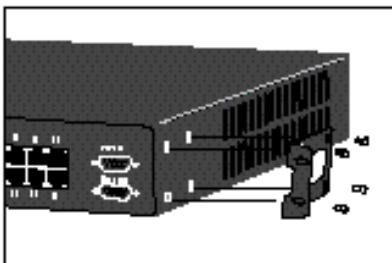


Figure 2-2 Mounting rack bracket on the IntraSwitch

- 3** Insert the four screws (supplied) into the holes and tighten with a Phillips screwdriver.
- 4** Repeat the two previous steps for the unit's other side.
- 5** Place the IntraSwitch in the equipment rack.
 - S** Important: Make sure the switch is supported until all four mounting screws for each bracket are installed.
- 6** Secure with mounting screws.
The switch is ready to be connected to the network. See "Connecting to the Network" on page 2-7.

Installation

Free-Standing Installation

The IntraSwitch has four rubber feet that can be applied to the bottom of the chassis to enable desktop/free-standing installation of the unit.

For desktop/free-standing installation:

- 1 Turn the switch over so that the bottom of the chassis faces up.
- 2 Peel the protective backing off of each rubber foot.
- 3 Position each rubber foot over the recessed areas near the four corners of the switch.
- 4 Press each rubber foot into place. See Figure 2-3.

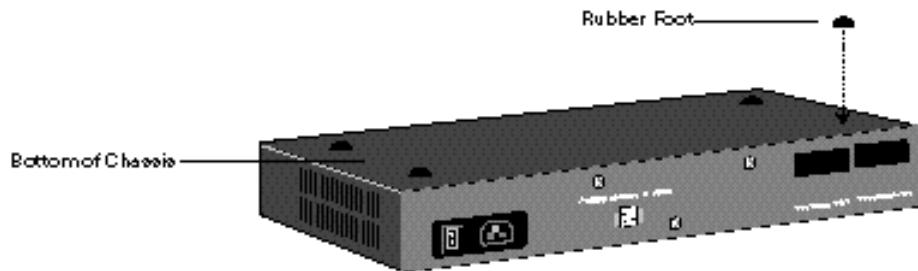


Figure 2-3 Applying rubber feet to bottom of IntraSwitch chassis

- 5 Place the IntraSwitch on a horizontal surface with a minimum area of 17.1" x 14.5".

The IntraSwitch is ready to be connected to the network. See "Connecting to the Network" on page 2-7.

Connecting to the Network

To connect the IntraSwitch to an Ethernet network:

- 1 Make sure the IntraSwitch is not powered on.
- 2 Connect network devices to the switch, following the cable guidelines outlined below.
- 3 Power on the IntraSwitch.

After the IntraSwitch is connected to the network and is powered on, it can be configured for management capabilities (see “Setting up for Management” on page 2-10).

10Base-T Ports

Table 2-2 10Base-T Cable Guidelines

Connecting To	Cable Required
Network Station	Category 3, 4, or 5 UTP (Unshielded Twisted Pair) straight-through cable (100 meters maximum) with RJ-45 connectors.
Repeater/Hub	Category 5, UTP cross-over cable (100 meters maximum) with RJ-45 connectors.
Repeater/Hub's Uplink port	Category 3,4 or 5, UTP straight-through cable (100 meters maximum) with RJ-45 connectors.

10/100TX Port

Table 2-3 10/100TX Port Cable Guidelines

Connecting To	Cable Required
Network Station	Category 5 UTP straight-through cable (100 meters maximum) with RJ-45 connectors.
Repeater/Hub	Category 5, UTP cross-over cable (100 meters maximum) with RJ-45 connectors.
Repeater/Hub's Uplink port	Category 5, UTP straight-through cable (100 meters maximum) with RJ-45 connectors.

Installation

MII Ports The MII expansion slots allow for the connection of 10/100TX, 100Base-FX, or 10Base-FL ports.

10/100TX Module

Table 2-4 10/100TX MII Module Cable Guidelines

Connecting To	Cable Required
Network Station	Category 5 UTP cross-over cable (100 meters maximum) with RJ-45 connectors.
Repeater/Hub	Category 5, UTP straight-through cable (100 meters maximum) with RJ-45 connectors.
Repeater/Hub's Uplink port	Category 5, UTP cross-over cable (100 meters maximum) with RJ-45 connectors.

100Base-FX Module

Table 2-5 100Base-FX MII Module Cable Guidelines

Connecting To	Cable Required
Network Station, Repeater/Hub, or other network device	Dual 62.5/125 micron graded-index multimode fiber-optic cable with an SC connector.

10Base-FL Module

Table 2-6 10Base-FL MII Module Cable Guidelines

Connecting To	Cable Required
SC Connector Network Station, Repeater/Hub, or other network device	Dual 62.5/125 micron graded-index multimode fiber-optic cable with an SC connector.
ST Connector Network Station, Repeater/Hub, or other network device	Dual 62.5/125 micron graded-index multimode fiber-optic cable with a dual ST connector.

Cabling Scenarios Diagram

The following diagram illustrates some of the various cabling scenarios available with the IntraSwitch 5324.

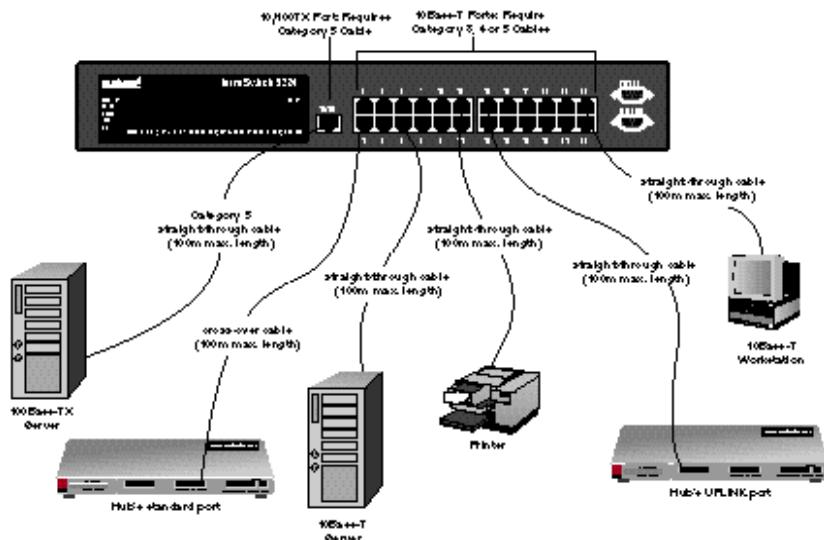


Figure 2-4 IntraSwitch cabling scenarios

Setting up for Management

BootP Configuration

To use the IntraSwitch 5324 as a managed switch, it must be configured with an IP address. This can be accomplished in one of two ways:

- o automatically using BootP (default)
- o manually via the Console port

The IntraSwitch is shipped with BootP/TFTP support. BootP allows the switch to be automatically configured with an IP address when the switch is connected to the network and is powered on, if your network contains a BootP server configured with available IP addresses.

S Important: BootP configuration only works if the switch does not have an IP address assigned to it. By default, the IntraSwitch is shipped without an assigned IP address.

1 Make sure your network has a BootP server configured with a valid IP address entry for the IntraSwitch 5324.

2 When the IntraSwitch is connected to the network and is powered on, it automatically transmits a BootP request across the network (up to 5 times) until it receives a valid IP address from the BootP server.

3 After an IP address is received, the switch can be managed.

See Chapter 4 for information on connecting to the switch for management.

To verify that the switch received an IP address, use a tool such as Ping¹ to try and access the IntraSwitch; if you can access the IntraSwitch, it is properly configured with an IP address.

1. Ping (an acronym for packet internet groper) is an application that can be used to test whether a remote device is properly connected to a network.

Console Configuration

To manually configure the IntraSwitch with an IP address via the switch's Console port, use a VT100 terminal or a VT100 terminal emulator running on a workstation or personal computer (PC) to connect to the switch's Local Management Interface.

- 1 Using a straight-through RS-232 cable with a 9-pin male D-subminiature plug at one end, connect a terminal or workstation (PC) running a terminal emulator to the Console port on the front of the IntraSwitch.

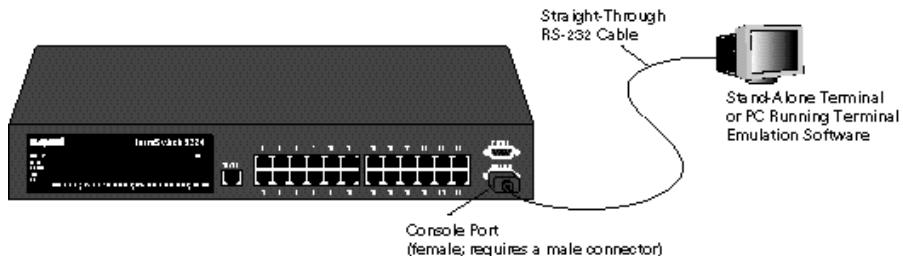


Figure 2-5 Connecting to the Console port

- 2 Make sure both units are powered on.
If using a PC with a terminal emulator, make sure it is configured with the following terminal settings:
 - o Bits Per Second: 9600
 - o Data Bits: 8
 - o Parity: None
 - o Stop Bits: 1
 - o Flow Control: None
- 3 The switch's Local Management Interface Main Menu appears on the terminal screen, as shown in Figure 2-6.

```
=====
Asante IntraSwitch Local Management Version 1.0
Copyright (c) 1997 Asante Technologies, Inc.
=====

Main Menu

<Cmd>      <Description>
g           General Information
c           Configuration
s           Statistics

Command>
```

Figure 2-6 IntraSwitch Local Management Interface Main Menu

- 4 Type **c** to open the Configuration Menu.
The “Enter Password” prompt appears.
- 5 Type your password at the prompt.
S Important: The default password is Asante. The password is case sensitive. For information on changing the password, see “Set Console Password” on page 5-33.
- 6 Type **i** to open the TCP/IP Parameter Menu.
- 7 Type **i** to select the option “Set IP Address.”
- 8 Type the IP address to be assigned to the switch at the prompt.
This address becomes the new factory default setting.
S Important: Depending on your network configuration, you may also need to set subnet mask and default router (gateway) information for the IntraSwitch. See “Configure TCP/IP Parameters” on page 5-11 for details.
- 9 Press **return**
- 10 Type **q** to return to the Configuration Menu.
The IntraSwitch is configured with an IP address and can now be managed. See Chapter 4 for information on management options.

Installing MII Modules

The IntraSwitch has two Media Independent Interface (MII) expansion slots which allow for the addition of various types of media access modules, including:

- o 10/100Base-TX
- o 100Base-FX
- o 10Base-FL (available with SC or ST connector)

The MII modules are sold separately and comply with IEEE 802.3 and 802.3u (10/100Base-T and 100Base-FX) specifications.

To install an MII module:

S Important: The MII modules are hot-swappable; you can install and/or remove a module without turning the switch's power off.

1 Unscrew the metal cover from the front of an MII expansion slot (located on the IntraSwitch's back panel) using a small Phillips screwdriver. See Figure 2-7.

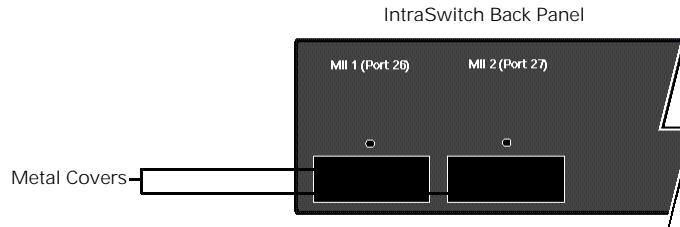


Figure 2-7 MII expansion slots

2 Align the bottom of the MII module with the rails on the inside of the expansion slot.

3 Slide the MII module into the expansion slot until it stops, then push the module in until it seats with the connector. See Figure 2-8.

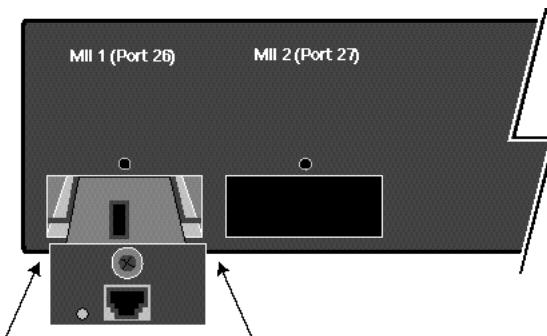


Figure 2-8 Installing an MII expansion module

- 4 Screw the module into place by tightening the thumbscrew on the module's cover.

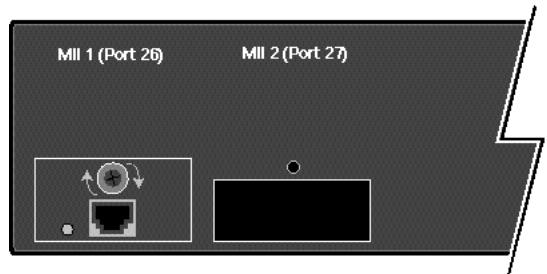


Figure 2-9 Securing an MII expansion module

- 5 Connect the installed MII expansion module to your network, following the instructions in “MII Modules” on page 2-13.

For more information on MII expansion modules, refer to the “IntraSwitch 5324 MII Expansion Modules Installation Guide” included with your module.

3

LED Indicators

This chapter describes the front panel layout of the IntraSwitch 5324 and explains how to interpret the LEDs.

This chapter contains the following sections:

- o LED Indicators — page 3-2
- o Port LEDs — page 3-3
- o Power LED — page 3-4
- o Diagnostic LEDs — page 3-4

LED Indicators

The IntraSwitch 5324 has five rows of LEDs on its front panel that convey the status of each 10Base-T port as well as the status of the 10/100TX port and MII expansion ports (if installed). See Figure 3-1.

The five rows of port LEDs display:

- o 100 Mbps operation
- o Max Util (maximum utilization)
- o FDP/COL (full duplex or collision)
- o Data
- o Link

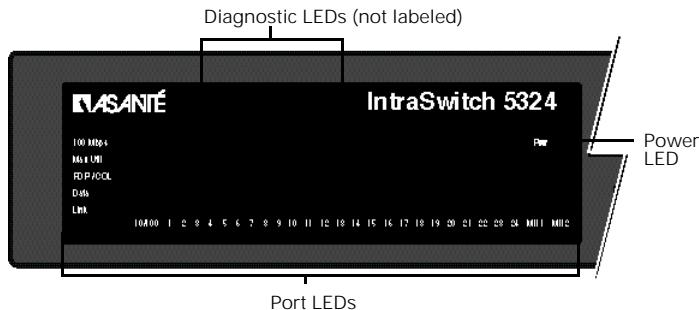


Figure 3-1 IntraSwitch LED panel

The IntraSwitch also has four diagnostic LEDs (not labeled) that illuminate once when the switch is first powered on or is reset.

S Important: The diagnostic LEDs are not labeled on the switch's front panel.

See “Diagnostic LEDs” on page 3-4 for more information.

When the IntraSwitch is first powered on, the port and diagnostic LEDs blink. The green power light illuminates and remains on, indicating electrical power to the unit.

Port LEDs

The IntraSwitch has five rows of LEDs. The following table states their color and meaning:

Table 3-1 Port LEDs

LED	Color	Meaning
100Mbps	green	<p>10/100TX port or an installed MII expansion port is operating at 100Mbps speed.</p> <p>Note: These LEDs only function with ports capable of operating at 100Mbps speed (i.e., the 10/100TX port or an installed 10/100 MII module).</p>
Max Util	amber	<p>The corresponding port's receive buffer is full (maximum utilization).</p> <p>Note: It is normal to see these LEDs light when the network is in a state of moderate-to-heavy activity.</p>
FDP/Col	amber	<p>Indicates full duplex mode on the 10/100TX port or on an installed MII expansion port.</p> <p>Indicates a collision at the switching port for those ports operating in half-duplex mode.</p> <p>Note: Full duplex means that a port can transmit and receive at the same time.</p> <p>Note: Collision is indicated only on those ports operating in half duplex mode.</p>
Data	green	<p>Traffic activity is occurring on the port (transmit [TX] or receive [RX]).</p> <p>Note: During heavy traffic periods, this LED may be lit continuously.</p>
Link	green	A node or other network device is properly connected to the corresponding port.

LED Indicators

Power LED	The green POWER light comes on and stays on when the unit is receiving electrical power.
Diagnostic LEDs	The IntraSwitch's four diagnostic LEDs (one orange, three green) blink once when the switch is first powered on.
S	Important: If the diagnostic LEDs illuminate for any length of time other than during a power cycle, contact Asante Technical support (see "Asking for Assistance" on page xiv).

4

Setting Up For Management

This chapter describes the different management options available with the IntraSwitch 5324 and explains how to connect to the switch using those options.

This chapter contains the following sections:

- o Overview — page 4-2
 - o Management Scenarios — page 4-3
- o Out-of-Band Management — page 4-4
- o In-Band Management — page 4-6

IntraSwitch Management

Overview

The IntraSwitch 5324 can be managed using any of the following methods:

Table 4-1 Management Options

Method	Type	Description
Console	out-of-band management	local connection to the IntraSwitch via the switch's Console port
Telnet (one session)	in-band management	remote connection over the network to the IntraSwitch via a terminal emulation program
SNMP-based Network Management Software	in-band management	remote connection to the IntraSwitch via any SNMP-based network management application such as IntraSpection

This chapter describes how to connect to the IntraSwitch using either out-of-band or in-band management, as illustrated in Figure 4-1.

For information on each management method, refer to the following:

- o Console/Telnet management — see Chapter 5, “Console Management.”
- o SNMP-based Network Management Software — see the section “SNMP-based Management Software” on page 4-6.

Management Scenarios

The following diagram illustrates the management options available with the IntraSwitch 5324.

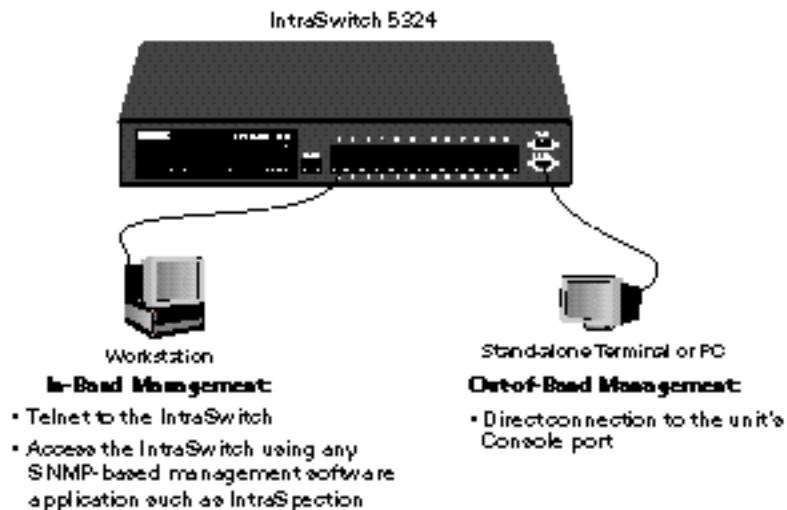


Figure 4-1 IntraSwitch 5324 management options

Out-of-Band Management

Out-of-band network management allows you to configure, manage, and monitor the IntraSwitch and each of its ports. You can perform these functions via the following method:

- o By attaching a terminal (or a terminal emulator) to the IntraSwitch's Console port and using the menu-driven Local Management Interface.

Out-of-band network management is guaranteed even when the in-band Ethernet network is down.

To access the IntraSwitch's Local Management Interface using out-of-band management:

- 1 Connect a stand-alone terminal or a PC running a terminal emulator directly to the IntraSwitch's Console port using a straight-through RS-232 serial cable with a male connector.

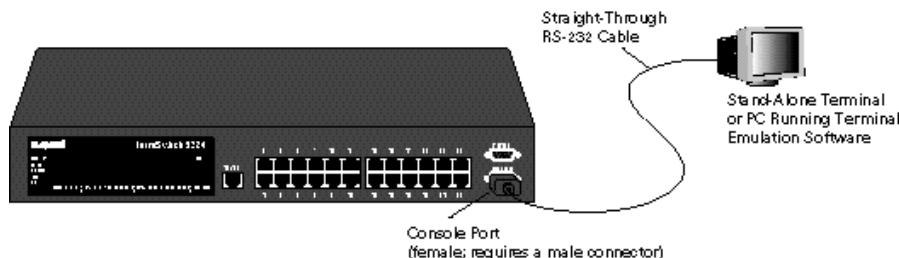


Figure 4-2 Connecting to the Console port

- 2 Make sure both units are powered on. If using a PC with a terminal emulator, make sure it is configured with the following terminal settings:
 - o Bits Per Second: 9600
 - o Data Bits: 8
 - o Parity: None
 - o Stop Bits: 1
 - o Flow Control: None

3 Once connected, the Local Management Interface Main Menu appears on the screen.

See Chapter 5, “Console Management,” for information on using the Local Management Interface to manage the IntraSwitch.

In-Band Management

In-band network management allows you to manage, control, and monitor the IntraSwitch and each of its ports over the Ethernet network.

You can perform these functions by accessing the IntraSwitch via the following two methods:

- o By connecting with a terminal emulation program such as Telnet¹ and using the Local Management Interface.
- o By connecting with any SNMP-based network management application and using its interface.

To manage the IntraStack via in-band management:

- 1 Make sure the network to which the IntraSwitch is connected is up and running.
- 2 Make sure the IntraSwitch is configured with valid IP information.
See “Setting up for Management” on page 2-10.
- 3 Connect to the IntraSwitch with a terminal emulator or any SNMP-based network management application.

Terminal Emulator

See Chapter 5, “Console Management,” for information on managing the IntraSwitch with a terminal emulator.

Note: All management screens using a terminal emulator are identical to those of the out-of-band Console interface.

SNMP-based Management Software

Refer to the software’s User’s Manual for information on managing the IntraSwitch with SNMP-based management software.

1. Telnet is a common terminal emulation application used in TCP/IP networks for remote terminal access to network devices.

5

Console Management

This chapter describes how to manage the IntraSwitch 5324 using the out-of-band Console or in-band Telnet interface.

This chapter contains the following sections:

- o Overview — page 5-2
- o Management Tasks — page 5-3
- o Local management interface — page 5-4
 - o General Information Menu — page 5-5
 - o Configuration Menu — page 5-6
 - o Statistics Menu — page 5-36

Console Management

Overview

The IntraSwitch's Local Management Interface is a menu-driven application that provides for management and configuration of the IntraSwitch and each of its ports.

The Local Management Interface can be accessed via two methods:

- o Out-of-band connection to the Console port
- o In-band connection via a terminal emulator such as Telnet (one session)
- S** Important: Refer to Chapter 4, "Setting Up For Management" for instructions on how to connect to the Local Management Interface using one of the two methods listed above.

Management Tasks

This chapter describes each menu item, as well as how to perform the following management tasks:

Table 5-1 Management Tasks

Task	Page
Logging into the Configuration Menu	page 5-6
Changing System Administration Information	page 5-10
Changing TCP/IP Information	page 5-12
Performing a Software Upgrade	page 5-15
Changing Community Strings	page 5-17
Enabling Traps	page 5-18
Adding a Trap Receiver	page 5-18
Deleting a Trap Receiver	page 5-19
Enabling or Disabling a Port	page 5-22
Configuring Full Duplex	page 5-22
Configuring Auto-Negotiation	page 5-23
Displaying the MAC Forwarding Table	page 5-26
Finding an Entry in the MAC Forwarding Table	page 5-27
Setting the Age-Out Timer	page 5-27
Enabling/Disabling Spanning Tree on ALL Ports	page 5-30
Enabling/Disabling Spanning Tree on a Single Port	page 5-30
Setting the Telnet Idle Time-Out Period	page 5-32
Changing the Console Password	page 5-33
Resetting the EEPROM	page 5-34
Resetting the IntraSwitch	page 5-35

Local Management Interface

After you connect to the switch's Local Management Interface using either out-of-band Console or in-band Telnet connection as described in Chapter 4, the Main Menu appears, as shown in Figure 5-1.

Main Menu

```
=====
Asante IntraSwitch Local Management Version 1.0
Copyright (c) 1997 Asante Technologies, Inc.
=====

Main Menu

<Cmd>      <Description>
g           General Information
c           Configuration
s           Statistics

Command>
```

Figure 5-1 Local Management Interface Main Menu

From the Main Menu, you can access three submenus:

- o General Information — page 5-5
- o Configuration — page 5-6
- o Statistics — page 5-35

If you are using Telnet, a fourth option will be available — Close Connection. This option closes your remote connection to the IntraSwitch's Local Management Interface.

Accessing a Submenu

To access a submenu, type the command letter of the corresponding option (e.g., type g for General Information).

Exiting a Submenu

To exit a submenu, type q. To exit a command line (e.g., Set Console Password in the Configuration Menu), press ctrl-c.

Note: For a one-page map of the Main Menu and its submenus, refer to Appendix D, "Management Menu Tree."

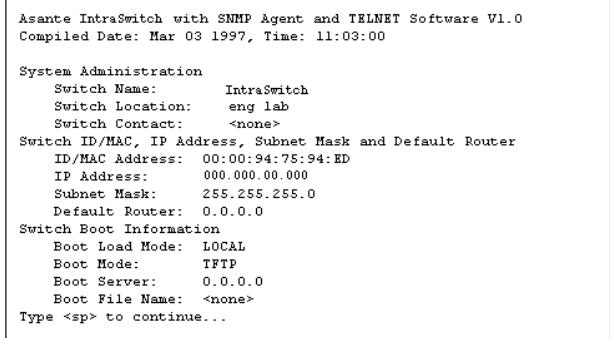
General Information Menu

The General Information Menu displays the switch's current operating information; such as, the switch's name, IP address, and boot information.

Note: The information displayed on this screen is read-only.

Accessing the General Information Menu

- o Type **g** from the Main Menu. A screen similar to Figure 5-2 appears.



```
Asante IntraSwitch with SNMP Agent and TELNET Software V1.0
Compiled Date: Mar 03 1997, Time: 11:03:00

System Administration
  Switch Name: IntraSwitch
  Switch Location: eng lab
  Switch Contact: <none>
Switch ID/MAC, IP Address, Subnet Mask and Default Router
  ID/MAC Address: 00:00:94:75:94:ED
  IP Address: 000.000.00.000
  Subnet Mask: 255.255.255.0
  Default Router: 0.0.0.0
Switch Boot Information
  Boot Load Mode: LOCAL
  Boot Mode: TFTP
  Boot Server: 0.0.0.0
  Boot File Name: <none>
Type <sp> to continue...
```

Figure 5-2 General Information Menu

S Important: For a description of each parameter on the General Information Menu, see "General Information Menu Parameters" on page 6-3.

To exit the General Information Menu, press the space bar on your keyboard.

Configuration Menu

The Configuration Menu allows you to configure settings for the IntraSwitch. These settings include items such as system administration information, TCP/IP parameters, RMON parameters, port parameters, and bootstrap parameters.

Logging into the Configuration Menu

- 1 From the Local Management Interface Main Menu, type c.
- 2 Type your password at the “Enter Password” prompt.
 - S** Important: The default password when you first access the Configuration Menu is Asante. The password is case sensitive.
For information on changing passwords, see “Set Console Password” on page 5-33.

The following Configuration Menu appears:

```
Asante IntraSwitch 5324 Configuration Menu

<Cmd>      <Description>
a           Config System Administration Information
i           Config TCP/IP Parameters
b           Config Bootstrap Parameters
n           Config SNMP Parameters
p           Config Port Parameters
m           Config RMON Parameters
f           Config MAC Forwarding Table Parameters
s           Config Spanning Tree Parameters
t           Set Telnet Idle Time-out
c           Set Console Password
e           Reset EEPROM To Default
q           Exit Configuration Menu

Command>
```

Figure 5-3 Configuration Menu

- 3 From this menu you can access configuration sub-menus by typing the command letter of the corresponding menu option (e.g., type a for the Configure System Administration Information Menu).
Table 5-2 provides a brief overview of each menu item.

Logging into the Configuration Menu

Table 5-2 Configuration Menu Items

Menu Item	Description
Config System Administration Information	Displays and allows you to change the name, location, and contact information for the IntraSwitch. See “Configure System Administration Information” on page 5-9.
Config TCP/IP Parameters	Displays and allows you to change the information needed to access the IntraSwitch over the network (in-band management). See “Configure TCP/IP Parameters” on page 5-11.
Config Bootstrap Parameters	Displays and allows you to change the parameters used for downloading a new version of software for the IntraSwitch. See “Configure BootStrap Parameters” on page 5-13.
Config SNMP Parameters	Displays and allows you to change the IntraSwitch’s SNMP (Simple Network Management Protocol) parameters; such as, read/write settings, trap authentication, and trap receivers. See “Configure SNMP Parameters” on page 5-16.
Config Port Parameters	Allows you to manually configure each of the switch’s ports for speed, connection, link mode, and auto-negotiation. See “Configure Port Parameters” on page 5-20.
Config RMON Parameters	Displays and allows you to change the switch’s RMON parameters. See “Configure RMON Parameters” on page 5-24.
Config MAC Forwarding Table Parameters	Displays and allows you to change the entries in the IntraSwitch’s MAC Forwarding Table. See “Configure MAC Forwarding Table Parameters” on page 5-25.
Config Spanning Tree Parameters	Displays the switch’s Spanning Tree parameters and allows you to enable or disable Spanning Tree. See “Configure Spanning Tree Parameters” on page 5-28.

Console Management

Menu Item	Description
Set Telnet Idle Time-out	Allows you to set the amount of time a Telnet connection can remain idle and still connected to the IntraSwitch. See “Set Telnet Idle Time-out” on page 5-32.
Set Console Password	Allows you to change the password needed to access the Configuration Menu. See “Set Console Password” on page 5-33.
Reset EEPROM To Default	Allows you to reset the IntraSwitch’s EEPROM to its factory default settings. See “Reset EEPROM” on page 5-34.
Exit Configuration Menu	Exits the Configuration Menu and returns you to the Local Management Interface Main Menu.

Configure System Administration Information

This menu displays and allows you to change the name, location, and contact information for the IntraSwitch.

To access the System Administration Information Menu, type a from the Configuration Menu.

The following menu appears:

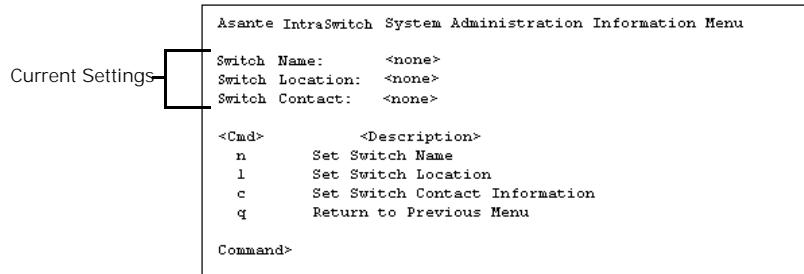


Figure 5-3 System Administration Information Menu

Current Settings

Table 5-3 explains each setting on the System Administration Information Menu.

For information on using this menu, see “Changing System Administration Information” on page 5-10.

Table 5-3 System Administration Information Settings

Setting	Description
Switch Name	The name of the IntraSwitch (up to 64 characters, including spaces).
Switch Location	The location where the IntraSwitch is physically located (up to 64 characters, including spaces).
Switch Contact	The name of the person responsible for the IntraSwitch (up to 64 characters, including spaces).

Changing System Administration Information

To change the switch's name/location/contact information:

- 1 Open the System Administration Information Menu by typing a in the Configuration Menu.
- 2 Type the command letter of the corresponding menu item in the System Administration Configuration Menu.
- 3 Type the information at the prompt.
See Table 5-3 for a description of each parameter.
 - s** Important: Each parameter is limited to 64 characters (including spaces).
To cancel a selected option, press **ctrl-c** at the command prompt.
- 4 Press return.
To quit and return to the Configuration Menu, type **q**.

Configure TCP/IP Parameters

This menu displays and allows you to change the information needed to access the IntraSwitch over the network (in-band management).

To access the TCP/IP Parameter Menu, type **i** from the Configuration Menu. The following menu appears:

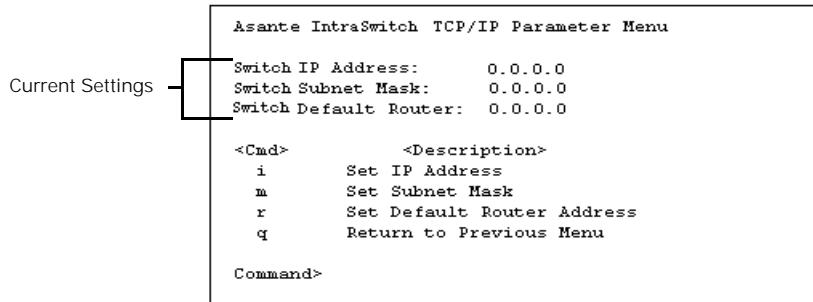


Figure 5-4 TCP/IP Parameter Menu

Note: By default, each parameter is set to 0.0.0.0.

Current Settings

Table 5-4 explains each setting on the TCP/IP Parameter Menu.

For information on using the menu, see “Changing TCP/IP Information” on page 5-12.

Table 5-4 TCP/IP Parameter Settings

Setting	Description
Switch IP Address	The IntraSwitch's IP (Internet Protocol) address.
Switch Subnet Mask	The address of the subnet mask on which the IntraSwitch is located.
Switch Default Gateway	The address of the IntraSwitch's default gateway.

Changing TCP/IP Information

To change the switch's IP address, subnet mask, or default gateway information:

- 1 Open the TPC/IP Parameter Menu by typing **i** in the Configuration Menu.
- 2 Type the command letter of the option you want to change.
- 3 Type the new address at the prompt.
See Table 5-4 for a description of each parameter.

S Important: Follow the format: number.number.number.number.

To cancel a selected option, press **ctrl-c** at the command prompt.
- 4 Press return.
To quit and return to the Configuration Menu, type **q**.

Configure Bootstrap Parameters

This menu displays and allows you to change the bootstrap parameters used for downloading a new version of software when one is issued.

To access the Bootstrap Parameters Menu, type b from the Configuration Menu. The following menu appears:

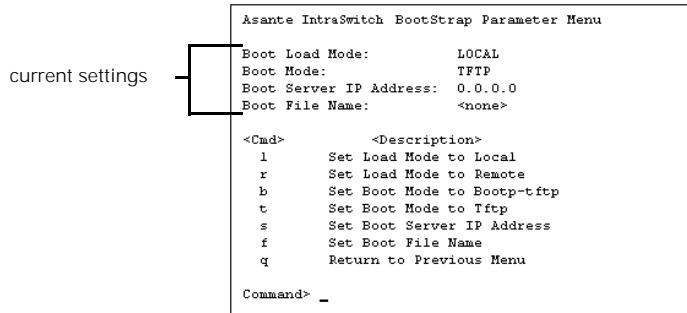


Figure 5-5 BootStrap Parameter Menu

S Important: The IntraSwitch's Load Mode default setting is Local.

Normally, these settings never need to be changed except when downloading a new version of the switch's software.

Current Settings

Table 5-5 explains each setting on the Bootstrap Parameter Menu.

For information on using the menu, see the following:

- o "Performing a Software Upgrade" on page 5-15.

Console Management

Table 5-5 Bootstrap Parameter Settings

Setting	Description
Set Load Mode to Local	Executes the software image file from the switch's internal flash memory (default setting). Important: This is the switch's default setting.
Set Load Mode to Remote	Loads a new software image file from a server on the network. Important: To use this option, you must select BootP-TFTP or TFTP as the Boot Mode.
Set Boot Mode to Bootp-tftp	Sets the IntraSwitch to request an IP address from a BootP server and download the software image file through TFTP. Important: To use this option, the switch's IP address must be set to 0.0.0.0 and the Load Mode must be set to Remote.
Set Boot Mode to TFTP	Sets the IntraSwitch to only download the software image file through TFTP (an IP address is not requested). Important: To use this option, the switch must already have an assigned IP address and the Load Mode must be set to Remote.
Set Boot Server IP Address	Sets the IP address of the remote server providing BootP/TFTP capabilities on your network.
Set Boot File Name	Sets the software image file name and network path.

Performing a Software Upgrade

When Asanté issues a new version of the software image for the IntraSwitch, you can obtain it from Asanté's World Wide Web site or by contacting Asanté's Technical Support (see "Asking for Assistance" on page -xiv).

The software file must be downloaded from a management station on your network, such as AsantéView. These instructions explain how to perform a software upgrade on the IntraSwitch from AsantéView.

To upgrade the IntraSwitch's software from AsantéView:

- 1 Make sure the switch is configured with an IP address.
- 2 Open the BootStrap Parameter Menu by typing b in the Configuration Menu.
- 3 Type r to set the Boot Load Mode to Remote.
- 4 Type t to set the Boot Mode to TFTP.
- 5 Type s and set the Boot Server IP address .ess
- 6 Type f and set the name and network path for the new software image file; for example:
`c:\AV\ISwitch.cfg`
- 7 Make sure the following two files are in the Boot server's directory:
`ISwitch.cfg`
`5324.10x`
- 8 Type q to return to the Configuration Menu.
- 9 Reset the switch by powering the switch off and then on.

Configure SNMP Parameters

This menu controls the IntraSwitch's SNMP (Simple Network Management Protocol) parameters. With these parameters, you can configure the switch's read and write community strings, set the switch to generate traps, and determine which management stations on your network can receive traps.

To access the SNMP Parameter Menu, type **n** from the Configuration Menu. The following menu appears:

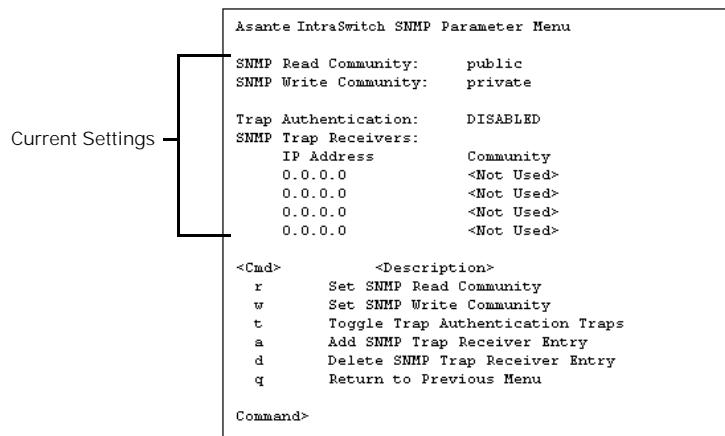


Figure 5-6 SNMP Parameter Menu

Current Settings

Table 5-6 explains each setting on the SNMP Parameter Menu.

For information on using the menu, see:

- “Changing Community Strings” — page 5-17
- “Enabling Traps” — page 5-18
- “Adding a Trap Receiver” — page 5-18
- “Deleting a Trap Receiver” — page 5-19

Table 5-6 SNMP Parameter Settings

Setting	Description
SNMP Read Community	<p>The IntraSwitch's SNMP read community string.</p> <p>The read community string is a single word that defines access rights for reading SNMP data objects.</p> <p>The default setting is public.</p>
SNMP Write Community	<p>The IntraSwitch's SNMP write community string.</p> <p>The write community string is a single word that defines access rights for writing SNMP data objects.</p> <p>The default setting is private.</p>
Trap Authentication	<p>The status of the SNMP agent to generate traps.</p> <p>The default setting is disabled.</p>
SNMP Trap Receivers	<p>The IP addresses of the network management stations that can receive traps. Normally, these addresses are the same as your network management software systems' IP address(es).</p> <p>Important: A maximum of four traps receivers is allowed.</p>

Changing Community Strings

To change the IntraSwitch's community strings:

- 1 Open the SNMP Parameter Menu by typing n in the Configuration Menu.
- 2 Type r to change the read community string or w to change the write community string.
- 3 Type a new community string at the prompt. To cancel a selected option, press ctrl-c at the command prompt.
- 4 Press return.

Enabling Traps

The IntraSwitch can be set to generate traps. Traps are messages sent across the network to an SNMP network management application (such as AsantéView or IntraSpection). They alert you to failures or to changes that occur to the switch device.

To set the IntraSwitch to generate traps:

- 1 Open the SNMP Parameter Menu by typing n on the Configuration Menu.
- 1 Type t on the SNMP Parameter Menu to toggle trap authentication from disabled to enabled.
- 2 Make sure there is a least one trap receiver entry. (See “Adding a Trap Receiver” below.)

Adding a Trap Receiver Entry

Trap receivers are the management stations designated to receive traps from the switch when they occur.

To add a trap receiver entry:

- 1 Open the SNMP Parameter Menu by typing n in the Configuration Menu.
- 1 Type a.
- 2 Type the IP address of the network management station you want to receive traps.
 - s Important: The maximum number of trap receivers that can be set is four.

To cancel a selected option, press ctrl-c at the command prompt.

- 3 Press return.

Deleting a Trap Receiver Entry

To delete a trap receiver entry:

- 1** Open the SNMP Parameter Menu by typing n on the Configuration Menu.
- 1** Type d.
- 2** Type the IP address of the receiving network station entry to be deleted.
- 3** Press return.

Configure Port Parameters

This menu allows you to manually configure each of the switch's ports for speed, connection, link mode, and auto-negotiation.

The default parameters for each 10Base-T port are:

- o auto-negotiation — disabled
- o port speed — 10Mbps
- o link mode — half duplex

The default parameter for the 10/100TX port and the 10/100 MII expansion ports is:

- o auto-negotiation — enabled

To access the Port Parameter Menu, type p from the Configuration Menu. The following menu appears:

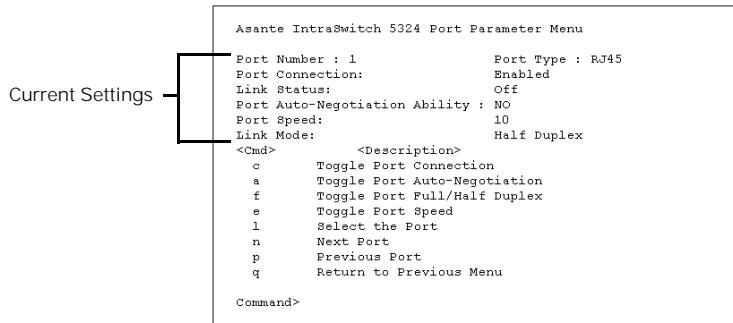


Figure 5-7 Port Parameter Menu

The Port Management menu displays statistics for one port at a time. The current port for which statistics are displayed is shown at the top of the screen (next to "Port Number:").

- o Ports 1 – 24 — displays information for each 10Base-T port.
- o Port 25 — displays information for the 10/100TX port.
- o Ports 26 and 27 — displays information for the MII expansion ports (MII 1 and MII 2, respectively).

Current Settings

Table 5-7 explains each setting on the Port Management Menu. For information on using the Port Management Menu, see:

- o “Enabling/Disabling a Port” — page 5-22
- o “Configuring Full Duplex” — page 5-22
- o “Configuring Auto-Negotiation” — page 5-23

Table 5-7 Port Parameter Settings

Setting	Description
Port Number	The number of the port for which information is displayed.
Port Connection	The administrative status of the port's connection (enabled or disabled) Note: If the port is disabled, the port will not receive any packets, even if the port's Link Status is ON.
Link Status	The status of the port. Displays On if a network device is properly connected to the selected port and is powered on; displays Off if there is no network device connected to the port.
Port Auto-Negotiation Ability	The auto-negotiation ability of the selected port.
Port Speed	Manually determines the speed of the selected port. The 10Base-T ports are only capable of transmitting at 10Mbps; the 10/100TX port and installed MII modules (except 10Base-FL) can be set to transmit at 100Mbps. Important: If you manually change the port speed on a port, auto-negotiation for the port is automatically disabled.
Link Mode	The port's link mode (either half or full duplex).

Enabling/Disabling a Port

The enabling or disabling of a port is a manual operation that can be used to isolate network devices possibly causing problems on the network or to prevent unauthorized use of a port or station.

To enable or disable a port:

- 1** Open the Port Parameter Menu by typing p on the Configuration Menu.
- 2** Select the port to be enabled or disabled by typing l and entering the port's number.

Note: The 10/100TX port is port number 25, the MII ports (MII 1 and MII 2) are port numbers 26 and 27, respectively.
- 3** Type c to toggle the port's connection to enabled or disabled, as desired.

Configuring Full Duplex

Full duplex mode allows a port to transmit and receive at the same time.

To configure for full duplex mode:

- 1** Open the Port Parameter Menu by typing p on the Configuration Menu.
- 2** Select the port to be configured for full duplex mode by typing l and entering the port's number.

Note: The 10/100TX port is port number 25, the MII ports (MII 1 and MII 2) are port numbers 26 and 27, respectively.
- 3** Type f to toggle the port's mode to half or full duplex, as desired.

The port's mode is displayed at the top of the screen.

Configuring Auto-Negotiation

Auto-negotiation is an optional feature of the Fast Ethernet standard that allows two devices on a common segment to communicate their capabilities, allowing the devices to determine their highest common speed and best communication parameters. The two devices involved in auto-negotiation are the network card installed in your computer and the IntraSwitch to which it is connected.

Communication between the two devices occurs when both devices are powered on, the cable connection between them is valid, and the network operating system software is running.

Options Negotiated

- o Ethernet type (100Base-TX Fast Ethernet or 10Base-T Ethernet)
- o Duplex mode (half or full)

To configure the 10/100TX port or an installed 10/100 MII module for auto-negotiation:

s **Important:** Only the 10/100TX port and 10/100 MII ports are capable of auto-negotiation.

1 Open the Port Parameter Menu by typing **p** on the Configuration Menu.

2 Select the 10/100TX port or 10/100 MII port to be configured for full duplex mode by typing **l** and entering the port's number.

Note: The 10/100TX port is port number 25, the MII ports (MII I and MII 2) are port numbers 26 and 27, respectively.

3 Type **a** to toggle the port's auto-negotiation status to enabled or disabled, as desired.

The auto-negotiation status is displayed at the top of the screen.

Configure RMON Parameters

This menu allows you to view and configure RMON (remote monitoring) information.

Note: RMON is a standard for monitoring and reporting network activity using remote monitors. It allows a management system to remotely monitor the switch for diagnostic purposes.

See Appendix B, "Supported MIBs" for a detailed description of each group of RMON that is supported by the switch.

- S** Important: See Chapter 8, "Advanced Management," for information on using RMON.

Configure MAC Forwarding Table Parameters

This menu allows you to view and search for addresses in the IntraSwitch's MAC Forwarding Table.

The MAC Forwarding Table is a table of node addresses that the IntraSwitch automatically builds by listening to and learning the information that is broadcast when a new node logs on. The switch checks the source and destination addresses as packets pass through the switch and records the information in the table. The switch uses the information in this table to decide whether a frame should be forwarded or filtered.

Note: The IntraSwitch's MAC address table holds a maximum of 1024 entries.

To access the MAC Forwarding Table Parameters Menu, type f from the Configuration Menu. The following menu appears:

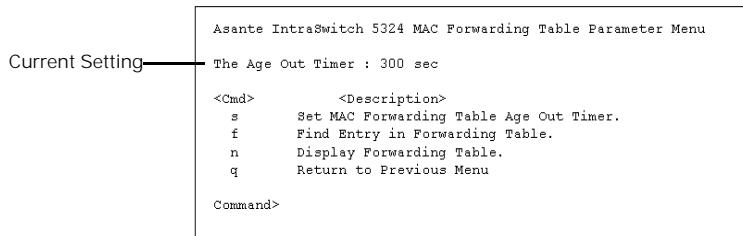


Figure 5-8 MAC Forwarding Table Parameters Menu

Current Settings

Table 5-8 explains the setting on the MAC Forwarding Table Parameter Menu.

For information on using the MAC Forwarding Table Parameter Menu, see:

- o “Displaying the Forwarding Table” — page 5-26
- o “Finding an Entry in the MAC Forwarding Table” — page 5-27
- o “Setting the Age Out Timer” — page 5-27

Console Management

Table 5-8 MAC Forwarding Table Parameter Setting

Setting	Description
Age Out Timer	The number of seconds an address remains in the table after it is learned by the switch.

Displaying the MAC Forwarding Table

- 1 Open the MAC Forwarding Table Menu by typing f on the Configuration Menu.
- 2 Type n to display the Forwarding Table. A screen similar to Figure 5-9 appears.

SRC MAC Address	SRC Port Number
00:00:0C:02:F1:B0	5
00:00:94:10:89:74	21
00:00:94:38:00:66	14
00:00:94:39:02:FD	1
00:00:94:40:1A:3F	6
00:00:94:40:1C:30	27
00:00:94:44:4B:1A	8
00:00:94:44:57:51	19
00:00:94:75:29:02	12
00:00:94:75:2B:D0	20
00:00:94:75:60:85	16
00:00:94:75:62:1D	18
00:00:94:75:6C:C0	22
00:00:94:75:A7:46	11
00:00:94:76:37:B2	4

Hit any key to continue for next 15 entries!!.....
Type q to exit....

Figure 5-9 MAC Forwarding Table

The table displays 15 entries at a time.

- 3 Type any key on your keyboard to display the next 15 entries.
- 4 Type q to exit the MAC Forwarding Table.

Configure MAC Forwarding Table Parameters

Finding an Entry in the MAC Forwarding Table

To find an entry in the table:

- 1** Open the MAC Forwarding Table Menu by typing f on the Configuration Menu.
- 2** Type f to find an entry.
- 3** Enter the MAC address you want to locate at the prompt.
- 4** Press return.
If the address is found within the table, it is displayed along with the port number.
If the address is not found, the message “No Such Entry” is displayed.

Setting the Age Out Timer

- 1** Open the MAC Forwarding Table Menu by typing f on the Configuration Menu.
- 2** Type s to set the timer.
- 3** Enter the number of seconds you want the addresses to remain in the table.

Note: The default is 300 seconds.

- 4** Press return.

Configure Spanning Tree Parameters

This menu allows you to view the IntraSwitch's Spanning Tree parameters. It also allows you to enable or disable Spanning Tree on all of the switch's ports or on a single port.

By default, the IntraSwitch is shipped with Spanning Tree enabled on all ports.

S Important: You should be familiar with the IEEE 802.1d specification before attempting to change these Spanning Tree parameters.

To access the Spanning Tree Parameter Menu, type **s** from the Configuration Menu. The following menu appears:

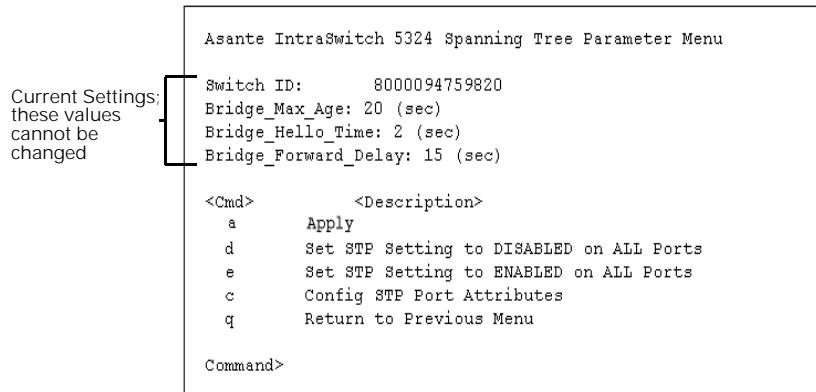


Figure 5-10 SpanningTree Parameters Menu

Current Settings

Table 5-9 explains each setting on the Spanning Tree Parameter Menu.

For information on using the menu, see:

- o “Enabling/Disabling Spanning Tree on ALL Ports” — page 5-30
- o “Enabling/Disabling Spanning Tree on a Port” — page 5-30

Configure Spanning Tree Parameters

Table 5-9 Spanning Tree Parameter Settings

Setting	Description
Switch ID	The identification number of the IntraSwitch. This value cannot be changed.
Bridge Max Age	The Maximum Age timer; determines how long the switch retains information received from BPDU (bridging Protocol Data Unit) packets. The default value is 20 seconds. This value cannot be changed.
Bridge Hello Time	The Hello timer; controls the frequency at which the switch sends a BPDU or "hello" packet. BPDU packets provide information to the Spanning Tree bridges about the configuration of the Spanning Tree network. The default value is 2 seconds. (This causes the switch to broadcast a BPDU packet every two seconds.) This value cannot be changed.
Bridge Forward Delay	The number of seconds a bridge must wait before it changes a link from a listening state to a learning state and before it changes the link from a learning state to a forwarding state. The default value is 15 seconds. (This means that after a link [or the entire switch] goes down and connectivity is re-established, the switch waits approximately 30 seconds [twice the default value] before it begins to forward traffic again. This value cannot be changed.)

Console Management

Enabling/Disabling Spanning Tree on ALL Ports

To enable or disable Spanning Tree on all ports:

- 1 Open the Spanning Tree Parameter Menu by typing s on the Configuration Menu.
- 2 Type d to disable Spanning Tree on all ports; type e to enable Spanning Tree on all ports.
To cancel the request, type ctrl-c.
- 3 Type a on the Spanning Tree Parameters Menu to apply the configuration.
The Spanning Tree status is displayed at the top of the menu next to STP Status

Enabling/Disabling Spanning Tree on a Single Port

To enable or disable Spanning Tree on an individual port:

- 1 Open the Spanning Tree Parameter Menu by typing s on the Configuration Menu.
- 2 Type c to open the Config STP Port Attributes Menu.

Figure 5-10 is an example of the Spanning Tree Port Parameter Menu.

```
Asante IntraSwitch 5324 Spanning Tree Port Parameter Menu

Current Port: 1
SPT Port State: Disabled
Port MAC Address: 00:00:94:75:98:05
Port Spanning Tree Status in Process: Enabled
Port Spanning Tree Setting : Enabled

<Cmd> <Description>
e Set Port STP Setting to Enabled
d Set Port STP Setting to Disabled
l Select Port Number
n Next Port Number
p Prev Port Number
q Return to Previous Menu

Command>
```

Figure 5-10 Spanning Tree Port Parameters Menu

3 Select the port number you want to enable or disable Spanning Tree on by typing l on the Port Parameter Menu and entering the port number at the prompt.

Note: The 10/100TX port is port number 25, the MII ports (MII I and MII 2) are port numbers 26 and 27, respectively.

4 Press return.

5 Type e to enable Spanning Tree on the port; type d to disable Spanning Tree on the port.

6 Type q to exit this menu and return to the Spanning Tree Parameter Menu.

7 Type a to apply the changes.

s Important: The change will not take effect until Apply is selected from the Spanning Tree Parameter Menu.

Set Telnet Idle Time Out

This option sets the Telnet idle time-out period.

If a Telnet connection to the IntraSwitch remains idle for the number of specified time-out minutes, the remote Telnet connection to the switch is automatically disabled.

To set the Telnet Idle Time Out period:

- 1 Type t from the Configuration Menu.

The following two lines appear at the bottom of the screen:

```
Current idle time = 20 minute(s)
Enter Idle Time in Minutes (0 means no time-out):
```

Figure 5-11 Set TelNet Idle Time Out command line

The current idle time is displayed in minutes.

- 2 Enter the number of minutes for the time-out period at the prompt.

Note: The default and recommended time-out period is 20 minutes.

To exit this option without making any changes to the current idle time-out period, press **ctrl-c**.

- 3 Press return.

Set Console Password

This option sets the IntraSwitch's Console password. The Console password is the password needed to access the Configuration Menu.

S Important: The default password is Asante.

To change the current Console password:

- 1** Type c from the Configuration Menu.
The following command line appears at the bottom of the screen:

```
Enter New Password (Max length is 20) >
```

Figure 5-12 Set Console Password command line

- 2** Type a new password at the "Enter New Password" prompt.

S Important: The password is case sensitive.
The password must be a minimum of one character and a maximum of 20 characters in length. The password takes any ASCII code.
- 3** Press return.
- 4** Type the new password again at the confirmation password prompt.
- 5** Press return.

Reset EEPROM to Default

This option resets the IntraSwitch's values to the factory default.

S Important: This procedure reverts all information to the factory default settings except for the switch's IP address, subnet mask, and default gateway.

See "Factory Defaults" on page 1-9 for a list of all the switch's factory default settings.

To reset the EEPROM:

1 Type e from the Configuration Menu.

The following command line appears at the bottom of the Configuration Menu:

```
Are you sure you want to reset EEPROM to default? (y/N)
```

Figure 5-13 Reset EEPROM to Default command line

2 Type y to reset the EEPROM to default or N to cancel the reset.

3 Reset the IntraSwitch by turning the switch off, and then on again.

Resetting the IntraSwitch

To reset the IntraSwitch:

- 1 Turn the IntraSwitch's power switch to the off position.
- 2 Turn the IntraSwitch's power switch to the on position.

The IntraSwitch is reset.

Statistics Menu

The Statistics Menu displays current statistics for the IntraSwitch on a per-port basis.

Accessing the Statistics Menu

To access the Statistics Menu:

- o Type **s** from the Local Management Interface Main Menu.
- s** Important: See Chapter 7, “Status Monitoring and Statistics” for information on using the Statistics Menu.

6

Status Monitoring and Statistics

This chapter describes how to view the IntraSwitch 5324's current operating information and how to gather statistics using the out-of-band Console or in-band Telnet interface.

This chapter contains the following sections:

- o Viewing the Current Operating Information — page 6-2
- o Viewing Statistics — page 6-4

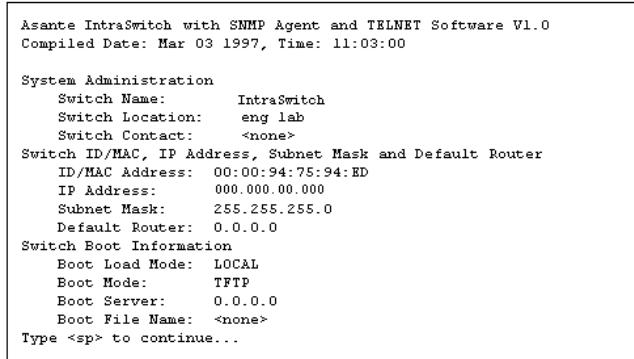
Monitoring the IntraSwitch

Viewing the Current Operating Information

The IntraSwitch's current operating information can be viewed by accessing the General Information Menu within the switch's Local Management Interface.

To view the IntraSwitch's current operating information:

- 1 Access the IntraSwitch's Local Management Interface.
- 2 Important: Refer to Chapter 3, "Setting Up For Management" for instructions on how to connect to the Local Management Interface.
- 2 Type g from the Main Menu. A screen similar to Figure 6-1 appears.



```
Asante IntraSwitch with SNMP Agent and TELNET Software V1.0
Compiled Date: Mar 03 1997, Time: 11:03:00

System Administration
  Switch Name: IntraSwitch
  Switch Location: eng lab
  Switch Contact: <none>
  Switch ID/MAC, IP Address, Subnet Mask and Default Router
    ID/MAC Address: 00:00:94:75:94:ED
    IP Address: 000.000.00.000
    Subnet Mask: 255.255.255.0
    Default Router: 0.0.0.0
  Switch Boot Information
    Boot Load Mode: LOCAL
    Boot Mode: TFTP
    Boot Server: 0.0.0.0
    Boot File Name: <none>
  Type <sp> to continue...
```

Figure 6-1 General Information Menu

Table 6-1 describes each parameter.

To exit the General Information Menu, press the space bar on your keyboard.

Viewing the Current Operating Information

Table 6-1 General Information Menu Parameters

Setting	Description
Switch Name	The name of the IntraSwitch.
Switch Location	The location of where the IntraSwitch is physically located.
Switch Contact	The name of the person responsible for the IntraSwitch.
ID/MAC Address	The IntraSwitch's hardware address.
IP Address	The IntraSwitch's IP (Internet Protocol) address.
Subnet Mask	The address of the subnet to which the IntraSwitch belongs.
Default Router	The IP address of the IntraSwitch's default gateway router.
Boot Load Mode	<p>The origin of the device boot image file (a software file residing on hardware required by the switch to operate on the network).</p> <p>Local — indicates the switch is set to load the image file from its internal flash memory (default setting).</p> <p>Remote — indicates the switch is set to download the image file from a remote boot server on the network.</p>
Boot Mode	<p>The boot mode used for downloading a new version of software for the IntraSwitch.</p> <p>BootP-TFTP — sets the switch to request an IP address from a BootP server and download the image file through TFTP.</p> <p>TFTP — sets the switch to only download the image file through TFTP (does not request an IP address; the switch must already be configured with an IP address to use this option).</p>
Boot Server	The remote boot server's IP address.
Boot File Name	The image file name and network path.

Viewing Statistics

Viewing statistics on a regular basis allows you to evaluate your network's performance. You can view current statistics for the IntraSwitch on a per-port basis by accessing the Statistics Menu in the Local Management Interface.

To view statistics:

- 1** Access the IntraSwitch's Local Management Interface.
- S** Important: Refer to Chapter 3, "Setting Up For Management" for instructions on how to connect to the Local Management Interface.
- 2** Type **s** from the Main Menu. A screen similar to Figure 6-2 appears:

Asante IntraSwitch Port Statistic Counters				
Port: 1	Page : 1	Elapse Time: 00:00:00		
<Counter Name>	<Curr/s>	<Peak/s>	<Avg/s>	<Total>
GoodRXOctets	0	0	0	0
GoodRXFrames	0	0	0	0
RXBroadcasts	0	0	0	0
RXMulticast	0	0	0	0
RXCRCErrors	0	0	0	0
RXAlignErrors	0	0	0	0
RXOversize	0	0	0	0
RXJabbers	0	0	0	0
RXUndersize	0	0	0	0
RXFragments	0	0	0	0
Pkt64	0	0	0	0

r>reset, s>stop, sl>ect port, n>ext port, p>rev port, next pa>ge, q>uit

Figure 6-2 Statistics screen (page one of two)

The Statistics screen displays one page of statistics at a time. To view the second page of statistics, type **a** for next page.

Note: For a description of each counter, see Table 4-1 on page 6-6.

Selecting a Port

The current port for which statistics are displayed is shown at the top of the screen (next to Port:).

- o Ports 1 – 24 — displays information for each 10Base-T port.
- o Port 25 — displays information for the 10/100TX port.
- o Ports 26 and 27 — displays information for the MII expansion ports (MII 1 and MII 2, respectively).

To monitor another port:

- o Type n to monitor the next port.
- o Type p to monitor the previous port.
- o Type l to select a port by entering the port number.

Monitoring Counters

Each port is monitored in four columns:

- o Curr ent/per second
Displays the number of counter occurrences each second.
- o Peak/per second
Displays the largest number of counter occurrences since opening or resetting the screen.
- o Average/per second
Displays the average number of counter occurrences since opening or resetting the screen.
- o Total
Displays the total number of counter occurrences since opening or resetting the screen.

Status Monitoring and Statistics

Resetting Statistics

- o Type **r** to reset the counters to zero.

Stopping Statistics

- o Type **s** to stop polling for statistics.

Exiting the Statistics Menu

- o Type **q** to exit and return to the Local Management Interface Main Menu.

Counter Descriptions

Table 4-1 describes each counter that is monitored by the IntraSwitch.

Table 6-2 Statistics Counters Descriptions

Counter	Description
GoodRXOctets	The count of data and padding octets in frames that are successfully received.
GoodRXFrames	The total number of good packets (including unicast, broadcast packets, and multicast packets) received.
RXBcasts	The total number of good packets received that were directed to the broadcast address.
RXMcasts	The total number of good packets received that were directed to a multicast address (does not include packets directed to the broadcast address).
RXCRC Errors	A count of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS (Frame Check Sequence) check.
RXAlignErrors	For the 10Mbps ports, the counter records alignment errors. For the 100Mbps ports, the counter records the sum of alignment errors and code errors (frames received with rxerror signal).

Counter	Description
RXOversize	The total number of packets received that were longer than 1518 octets in length (excluding framing bits, but including FCS octets) and were otherwise normal.
RXJabbers	The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error.
RXUndersize	The total number of packets received with less than 64 octets (excluding framing bits, but including FCS octets) and were otherwise normal.
RXFragments	The total number of packets received that were not an integral number of octets in length or that had a bad FCS, and were less than 64 octets in length (excluding framing bits but including FCS octets).
Pkt64	The total number of packets (including error packets) received with 64 octets (excluding framing bits, but including FCS octets).
Pkt65-127	The total number of packets (including error packets) received that were between 65 and 127 octets in length (excluding framing bits, but including FCS octets).
Pkt128-255	The total number of packets (including error packets) received that were between 128 and 255 octets in length (excluding framing bits, but including FCS octets).
Pkt256-511	The total number of packets (including error packets) received that were between 256 and 511 octets in length (excluding framing bits, but including FCS octets).
Pkt512-1023	The total number of packets (including error packets) received that were between 512 and 1023 octets in length (excluding framing bits, but including FCS octets).
Pkt1024-1518	The total number of packets (including error packets) received that were between 1024 and 1518 octets in length (excluding framing bits, but including FCS octets).

Status Monitoring and Statistics

Counter	Description
NetOctets	The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets). This object can be used as a reasonable indication of Ethernet utilization.
SQEErrors	A count of times that the SQE TEST ERROR message is generated by the PLS sublayer for a particular interface. The SQE TEST ERROR is defined in section 7.2.2.2.4 of ANSI/IEEE 802.3 - 1985 and its generation in 7.2.4.6 of the same.
GoodTXOctets	A count of data and padding octets of frames that were successfully transmitted.
GoodTXFrames	The total number of packets (including bad packets, broadcast packets and multicast packets) transmitted successfully.
STXCollision	(Single Collision TX Frames) A count of the successfully transmitted frames on a particular interface for which transmission is inhibited by exactly one collision.
MTXCollision	(Multiple Collision TX Frames) A count of the successfully transmitted frames on a particular interface for which transmission is inhibited by more than one collision.

7

Advanced Management

This chapter describes how to manage the IntraSwitch 5324 using RMON via the out-of-band Console or in-band Telnet interface.

This chapter contains the following sections:

- o RMON Overview— page 7-2
- o Benefits of RMON — page 7-2
- o Configuring RMON Parameters — page 7-3
 - o RMON History Group — page 7-4
 - o RMON Alarm Group — page 7-9
 - o RMON Event Group — page 7-15

Advanced Management

RMON Overview

RMON stands for remote monitoring. It is a standard for monitoring and reporting network activity using remote monitors.

You can use RMON via the switch's Local Management Interface or via any SNMP-based network management software that supports RMON.

A typical RMON setup consists of two components:

- o The RMON probe — a device or software agent that continually collects statistics about a LAN segment and transfers the information to a management workstation (either on request or when a pre-defined threshold is crossed).
- o The management workstation — a network station that communicates with the RMON probe and collects statistics from it. The workstation does not have to be on the same network as the probe and can manage the probe by in-band or out-of-band connections.

Benefits of RMON

Some of the benefits of using RMON are:

- o Improved efficiency you can remain at one workstation and collect information from widely dispersed LAN segments.
- o Productive management—if configured correctly, RMON probes can deliver information before problems occur.
- o Reduces load on the network and the management station — an RMON probe looks at the network on behalf of the network management station without affecting the characteristics and performance of the network.

Configuring RMON Parameters

S Important: A knowledge of RMON is strongly recommended to configure these parameters.

To view and configure RMON parameters via the IntraSwitch's Local Management Interface:

- 1 Access the IntraSwitch's Local Management Interface.
- 2 Type c from the Main Menu.
The "Enter Password" prompt appears.
- 3 Type your password at the prompt, then press return.
- 4 Type m to open the RMON Parameters menu.
The following menu appears:

```
Asante IntraSwitch RMON Parameter Menu

<Cmd>      <Description>
h           RMON History Group.
a           RMON Alarm Group.
e           RMON Event Group
q           Return to Previous Menu

Command> -
```

Figure 7-1 RMON Parameters Menu

From this menu you can access three submenus:

- o RMON History Group — page 7-4
- o RMON Alarm Group — page 7-9
- o RMON Event Group — page 7-15

RMON History Group

The History Group records periodic statistical samples from a network and stores them for later retrieval.

History provides segment statistics shown over time, with user-definable sampling rates and time intervals. This feature allows you to perform accurate trend analysis by displaying, adding, and/or deleting RMON History Group entries.

To access the RMON History Group menu, type **h** from the RMON Parameter Menu. The following menu appears.

```
Asante IntraSwitch 5324 RMON History Group Menu

<Cmd>      <Description>
p      Display RMON History Control Group Entry.
a      Add RMON History Control Group Entry.
d      Delete RMON History Control Group Entry.
s      Display RMON History Statistic Entry.
q      Return to Previous Menu

Command>
```

Figure 7-2 RMON History Group Menu

Adding an RMON History Control Group Entry

To add a History Control Group entry:

S Important: The maximum number of entries that can be added is 27.

You can add multiple entries (up to 27) on the same interface.

- 1 Type **a** from the RMON History Group menu. Command prompts, similar to those shown in Figure 7-3, appear one at a time on the screen.

Adding an RMON History Control Group Entry

command prompts

```
Please Enter Data Source (interface # 1 - 27) : 1
Please Enter Requested Buckets (1 - 10) : 5
Please Enter Sampling Interval (1 - 3600) (sec) : 10
Please Enter Owner String : Asante

The parameter of this RMON History Control entry is :

Interface Number : 1
Requested Buckets (1 - 10) : 5
Granted Buckets : 5
Sampling Interval (1 - 3600) (sec) : 10
Owner String : Asante

Are you sure you want to set these parameters?(y/N) _
```

Figure 7-3 Add RMON History Control Group entry

2 Enter the information requested for each prompt, following the guidelines below.

Data Source (Interface Number)

Enter the number of the port for which statistics are to be gathered.

Requested Buckets

Enter the number of discrete time intervals over which data is to be saved. This number can be between 1 and 10.

Sampling Interval

Enter the interval (in seconds) over which the data is to be sampled for each bucket. This interval can be set to any number of seconds between 1 and 3600 (1 hour).

Owner String

Enter the name of the person who configured this entry. This value is used for tracking purposes; it can be any text or integer.

3 Type y at the prompt to set the parameters, or type n to cancel.

Displaying an RMON History Control Group Entry

To display an RMON History Control Group entry:

S Important: There must be at least one History Control Group entry in the system in order to display information for an entry. To add a History Control Group entry, see “Adding an RMON History Control Group Entry” on page 7-4.

- 1** Type p from the RMON History Group menu.
- 2** Enter the number of the RMON History Group entry to be displayed.
- 3** Press return.

A screen similar to Figure 7-4 appears.

```
There are 1 entries in the History Control Group
Which History Control Entry : 1
The parameter of this RMON History Control entry is :
Interface Number : 1
Requested Buckets (1 - 10) : 5
Granted Buckets : 5
Sampling Interval (1 - 3600) (sec) : 10
Owner String : Asante
Hit any key to continue...
-
```

Figure 7-4 Display RMON History Control Group entry

Interface

The number of the port for which statistics are displayed.

Requested Buckets

The requested number of discrete time intervals over which data is to be saved. This number can be between 1 and 10.

Granted Buckets

The number of discrete sampling intervals over which data shall be saved in the part of the media-specific table associated with this entry.

Displaying an RMON History Statistic Entry

Sampling Interval

The interval (in seconds) over which the data is sampled for each bucket.

Owner String

The person or entity who configured this entry.

Displaying an RMON History Statistic Entry

To display statistics for a History Control Group entry:

- 1 Type s from the RMON History Group menu.
- 2 Type the number of the History Control Group entry you want to display statistics for at command prompt.

A screen similar to Figure 7-5 appears.

Asante IntraSwitch 5324 Port RMON History Counters				
Sampling Interval: 10 sec	<Counter Name>	<Bucket 5>	<Bucket 4>	<Bucket 3>
	TimeStamp	1541	1531	1521
	DropEvents	0	0	0
	Octets	0	0	0
	Pkts	0	0	0
	BroadcastPkts	0	0	0
	MulticastPkts	0	0	0
	CRCAccErr	0	0	0
	UndersizePkts	0	0	0
	OversizePkts	0	0	0
	Fragments	0	0	0
	Jabbers	0	0	0
	Collisions	0	0	0
	Utilization	0	0	0

Figure 7-5 Display RMON History Statistic entry

The Local Management Interface can display only four buckets. To view more, use an SNMP-based management software program capable of RMON to access the RMON History Statistics.

The screen automatically updates at the set sampling interval.

- 3** Type s to stop the sampling interval.
- 4** Type q to return to the History Group menu.

Deleting an RMON History Control Group Entry

This option allows you to delete an RMON History Control Group entry.

To delete a History Control Group entry:

- 1** Type d from the RMON History Group menu.
- 2** Type the number of the History Control Group entry to be deleted at the command prompt.
- 3** Press return.
The History Control Group Entry to be deleted is displayed.
- 4** Type y to confirm the deletion, or n to cancel the deletion.

RMON Alarm Group

The Alarm Group periodically takes statistical samples from variables and compares them to previously configured thresholds. The alarm table stores configuration entries, each of which defines a polling period and various threshold values.

S Important: The Alarm Group requires implementation of the Event Group. You must create an Event Group entry before you can add an RMON Alarm Group entry. See “Add RMON Event Group Entry” on page 7-16 for instructions.

To access the RMON Alarm Group menu, type a from the RMON Parameter Menu. A screen similar to Figure 7-6 appears.

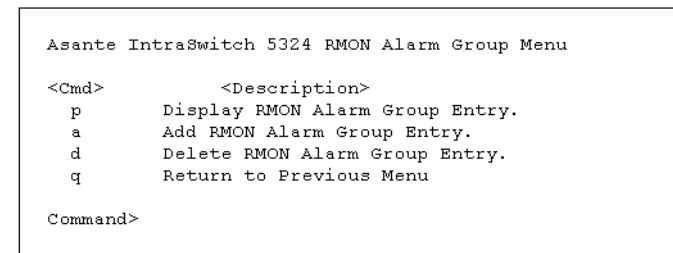


Figure 7-6 RMON Alarm Group Menu

Adding an RMON Alarm Group Entry

To add an Alarm Group Entry:

S Important: The Alarm Group requires implementation of the Event Group. You must have an Event Group entry created BEFORE you can add an Alarm Group entry. See “Add RMON Event Group Entry” on page 7-16 for instructions.

- 1** Type a from the RMON Alarm Group Menu. Command prompts, similar to those shown in Figure 7-7, appear one at a time on the screen.

Command Prompts

```
Please Enter Sampling Interval (sec) : 10
Please Enter Data Source (OBJ ID): 1.3.6.1.2.1.2.2.1.13.1
Please Enter Sampling Type (1) absoluteValue, (2) deltaValue: 2
(1) rising alarm. (2) falling alarm. (3) rising | falling alarm.
Please Enter Startup Alarm : 1
Please Enter Rising Threshold : 1000
Please Enter Falling Threshold : 500
Please Enter Rising Event Index : 1
Please Enter Falling Event Index : 1
Please Enter Owner String : Asante
```

Figure 7-7 Add RMON Alarm Group entry

- 2** Enter the information requested for each prompt, following the guidelines below.

Sampling Interval

Enter the number (in seconds) for which data is to be sampled.

This value can be set to any number of seconds between 1 and 3600 (1 hour).

Data Source (Obj ID)

Enter the Object ID of the counter to be monitored.

S Important: The Object ID for a counter is defined in the MIB with which it is associated (e.g., MIB II, RMON, etc).

Some counters require an interface number (the number of the port to be monitored) at the end of the object ID. See Figure 7-8.

For example, to monitor the RMON Ethernet Statistics Octets counter (etherStatsOctets), enter the following object ID number, directly followed by the number of the port to be monitored:

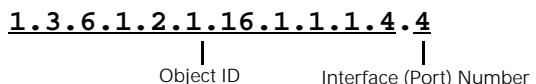


Figure 7-8 Object ID entry

Sampling Type

Enter the method for sampling the selected Data Source.
Options are:

- o absolute value — the value of the Data Source is compared directly with the thresholds at the end of the sampling interval.
- o delta value — the value of the Data Source at the last sample is subtracted from the current value, and the difference compared with the thresholds.

Startup Alarm

Enter the type of alarm to be sent. Option are:

- o **risingAlarm** — if the first sample is greater than or equal to the value set for the Rising Threshold (see “Rising Threshold” on page 7-12), an alarm is generated.

- o fallingAlar ~~m~~ if the first sample is less than or equal to the value set for the Falling Threshold (see “Falling Threshold” below), an alarm is generated.
- o risingOrFallingAlar ~~-m~~ sets both rising and falling alarms.

Rising Threshold

Enter the number of the threshold for the sampled statistic.

When the current sampled value is greater than or equal to this threshold, and the value at the last sampling interval was less than this threshold, a single event will be generated.

Falling Threshold

Enter the number of the threshold for the sampled statistic.

When the current sampled value is less than or equal to this threshold, and the value at the last sampling interval was greater than this threshold, a single event will be generated.

Rising Event Index

Enter the number of the Event entry that was created for this Alarm entry.

This number references the Event entry that is to be utilized when a rising threshold is crossed. If there is no corresponding entry in the eventTable, or if this value is zero, no associated event will be generated.

Falling Event Index

Enter the number of the Event entry that you created for this Alarm entry.

This number references the Event entry that is to be utilized when a falling threshold is crossed. If there is no corresponding entry in the eventTable, or if this value is zero, no associated event will be generated.

Owner String

Enter name of the person or entity who defined the entry.

3 Type y at the prompt to set the parameters.

Displaying an RMON Alarm Group Entry

Displaying an RMON Alarm Group Entry

To display information for a specific Alarm Group entry:

S Important: There must be at least one Alarm Group entry in the system in order to display information for an entry. To add an Alarm Group entry, see “Adding an RMON Alarm Group Entry” on page 7-10.

- 1** Type p from the RMON Alarm Group menu.
- 2** Enter the number of the Alarm Group entry to be displayed.
- 3** Press return.

A screen similar to Figure 7-9 appears.

```
There are 1 entries in the Alarm Control Group
Which Alarm Control Entry : 1
The parameter of this RMON Alarm Control entry is :
Alarm Sampling Interval (sec) : 10
Alarm Variable : { 1. 3. 6. 1. 2. 1. 2. 2. 1. 13. 1. 0 }
Alarm Sample Type : deltaValue
Alarm Start Up : rising alarm
Alarm Rising Threshold : 10
Alarm Falling Threshold : 5
Alarm Rising Event Index : 1
Alarm Falling Event Index : 10
Owner String : Asante
Hit any key to continue...
```

Figure 7-9 Display RMON Alarm Group entry

Note: For a description of each parameter, see page 7-10 to 7-12.

Deleting an RMON Alarm Group Entry

This option allows you to delete an Alarm Group entry.

To delete an Alarm Group entry:

- 1 Type d from the RMON Alarm Group menu.
- 2 Type the number of the Alarm Group entry to be deleted at the command prompt.
- 3 Press return.
The Alarm Group entry to be deleted is displayed.
- 4 Type y to confirm the deletion, or n to cancel.

RMON Event Group

The Event Group controls the generation and notification of events from the device. It provides a list of all the events (activities) created by the monitor.

S Important: An Event Group entry is associated with an Alarm Group entry.

An Alarm Group entry determines when an alarm should occur; the associated Event Group entry determines the action to occur when the alarm is triggered.

To access the RMON Event Group menu, type e from the RMON Parameter Menu. A screen similar to Figure 7-10 appears.

```
Asante IntraSwitch 5324 RMON Event Group Menu

<Cmd>      <Description>
p          Display RMON Event Group Entry.
a          Add RMON Event Group Entry.
d          Delete RMON Event Group Entry.
l          Display RMON Event Group Entry Log.
q          Return to Previous Menu

Command>
```

Figure 7-10 RMON Event Group Menu

Adding an RMON Event Group Entry

This option allows you to add an Event Group entry.

To add an Event Group Entry:

- 1 Type a from the RMON Event Group Menu.
Command prompts, similar to those shown in Figure 7-11, appear one at a time on the screen.

Command Prompts

```
Event Description : Rising Event
(1) NONE. (2) LOG. (3) TRAP. (4) LOG and TRAP.
Event Type : 4
Trap Community String : private
Please Enter Owner String : Asante

The parameter of this RMON Event entry is :

Event Description : Rising Event
Event Type : LOG and TRAP
Event Community String : private
Event Last Time Sent : 04:35:38
Event Owner String : Asante

Are you sure you want to set these parameters? (y/N)
```

Figure 7-11 Add RMON Event Group entry

- 2 Enter the information requested for each prompt, following the guidelines below.

Event Description

Enter a description of the event.

Event Type

Enter the type of event to occur upon a threshold violation.

Options are:

- o none — no action is taken.
- o log — records the alarm in the RMON Event Group Entry Log.
- o trap — sends a trap to the SNMP trap receiver (specified in the SNMP parameters menu).
- o log and trap — records the alarm and sends a trap to the SNMP trap receiver.

Displaying an RMON Event Group Entry

Event Community String

Enter the octet string of the SNMP community to receive the event.

Event Owner String

Enter the name of the person who created this entry.

- 3** Type y at the prompt to set the parameters, or type n to cancel.

Displaying an RMON Event Group Entry

To display an Event Group entry:

S Important: There must be at least one Event Group entry in the system in order to display information for an entry. To add an Event Group entry, see “Adding an RMON Event Group Entry” on page 7-16.

- 1** Type p from the RMON Event Group menu.
- 2** Enter the number of the RMON Event Group entry to be displayed.
- 3** Press return.

A screen similar to Figure 7-12 appears.

```
There are 4 entries in the Event Group
Which Event Entry : 1
The parameter of this RMON Event entry is :
Event Description : Rising Event
Event Type : LOG and TRAP
Event Community String : private
Event Last Time Sent : 00:00:00
Event Owner String : Asante
Hit any key to continue...
```

Figure 7-12 Display RMON Event Group entry

Note: For a description of each parameter, see page 7-16 to 7-17.

Displaying the RMON Event Group Entry Log

This option allows you to display a log of recorded events that have occurred.

S Important: Only events with an Event Type of Log or Log and Trap are displayed.

To display the RMON Event Group Entry log:

- 1 Type 1 from the RMON Event Group menu.
- 2 Type the number of the Event Group entry for which you want to view information.

The log of events for that entry is displayed, similar to Figure 7-13.

```
There are 2 entries in the Event Group
Which Event Entry : 1
The Log of Event Entry : 1
Log Entry : 1
Log Time : 00:04:23
Log Description : IntraSwitch 5324 Rising Event Log.

End of Log Table !!
Press any key to continue!!
```

Figure 7-13 Display RMON Event Group entry log

Note: If there are no events recorded for the entry, the message “End of LogTable!!” is displayed. Press ctrl-c to continue.

Deleting an RMON Event Group Entry

This option allows you to delete an Event Group entry.

To delete an Event Group entry:

- 1** Type **d** from the RMON Event Group menu.
- 2** Type the number of the Event Group entry to be deleted at the command prompt.
- 3** Press return.
The Event Group entry to be deleted is displayed.
- 4** Type **y** to confirm the deletion, or **n** to cancel.

Troubleshooting

This section provides some diagnostic tips for troubleshooting problems with your network and the IntraSwitch 5324.

LED Indicators

The following table describes some possible errors and solutions for troubleshooting problems via the switch's LEDs.

LED Error Type/Cause	Solution (Options or Steps)
Power LED does not come on when the power cord is connected to an outlet	<ul style="list-style-type: none">○ AC power source is not operational.○ Power cord not connected/faulty.○ Internal power supply has failed. <ul style="list-style-type: none">○ Check the AC power source.○ Connect/replace the power cord.○ If configured, ensure redundant DC power supply is connected and is operating (schedule time to return unit for repair).
Data LED for the port never comes on	<ul style="list-style-type: none">○ Cable connection is broken or faulty.○ Equipment to which the port is connected is not operating. <ul style="list-style-type: none">○ Make sure the LINK LED is on; if the LINK LED is off, replace cable.○ Make sure the device to which the port is connected is operating properly
Max Util (maximum utilization) LED for the port never blinks (steady light)	<ul style="list-style-type: none">○ Port is overloaded. <ul style="list-style-type: none">○ Check the port statistics for the amount of traffic, errors, etc. being transmitted on the port.

Troubleshooting

LED Error Type/Cause	Solution (Options or Steps)
<p>Link LED for the port goes off</p> <ul style="list-style-type: none">○ Cable connection is broken.○ Network station to which the port is connected has been powered off.○ Wrong type of cable is connected between the port and the equipment.	<ul style="list-style-type: none">○ Make sure connectors are seated correctly in the equipment at both ends of the cable. Check the continuity of the wires in the cable and the pin assignments on the RJ-45 connectors.○ Make sure the station to which the port is connected is plugged in and powered on.○ Make sure the correct type of cable is connected to the port (refer to "Connecting to the Network" on page 2-7).

Supported MIBs

The IntraSwitch 5324 supports the following MIBs (Management Information Bases):

- o RMON (RFC 1757)
- o MIB II (RFC 1213)
- o Bridge MIB (RFC 1493)

This section describes each supported MIB and its groups.

RMON (RFC 1757)

The IntraSwitch 5324 supports four groups of Remote Network Monitoring (RMON) MIB objects.

- o Statistics
- o History Group
- o Alarm Group
- o Event Group

Note: RMON is a standard for monitoring and reporting network activity using remote network monitoring devices (referred to as "monitors" or "probes.") RMON is designed to supplement the management information obtained and used by SNMP. For more information, refer to RFC 1757.

Statistics

The Statistics group contains statistics measured by the probe for each monitored interface on the device. These statistics take the form of free-running counters that start from zero when a valid entry is created.

The statistics group lists Ethernet statistic types (e.g., multicasts, fragments, collisions) and supplies a numerical counter of occurrences.

History Group

The History group records periodic statistical samples from the collision domain and stores them in an SNMP table for later retrieval.

The History group allows the manager to set a timer to record samples of Ethernet statistics. It allows baselining of network activity over time.

Once samples are taken, the sample data is stored in an entry in a media-specific table. Each such entry defines one sample and is associated with the historyControl entry that caused the sample to be taken. The only media-specific table defined is the etherHistoryTable for Ethernet networks.

Alarm Group

The Alarm group periodically takes statistical samples from variables and compares them to previously configured thresholds. The alarm table stores configuration entries, each of which defines a polling period and various threshold values.

If a monitored variable exceeds a threshold value, the switch generates an event. No more events are generated for that threshold until the opposite threshold is exceeded.

You can limit the generation of events via the MIB. When sampling a delta value, you can increase the precision of the sample by taking the sample twice per period and comparing the sum of the latest two samples to the threshold. This allows the switch to detect threshold crossings that span the sampling boundary. This does not require any special configuration of the threshold value.

This group requires the implementation of the Event Group.

Event Group

The Event group controls the generation and notification of events from the switch.

Each entry in the eventTable describes the event's parameters that can be triggered. The switch generates an event when an associated condition is present in the MIB. The event can trigger a related function in the MIB.

Each eventEntry can specify that, when an event occurs, a log entry and an SNMP trap message is created for the event. The community for the SNMP trap message is contained in the associated eventCommunity object. The condition that triggers the event determines the enterprise and specific trap fields of the trap. If the eventTable is triggered by a condition specified elsewhere, the enterprise and specific trap fields must be specified for traps generated for that condition.

Data related to the control of the generation and notification of events from the selected device.

MIB II (RFC 1213)

The IntraSwitch supports the following MIB II groups:

System Group

The System group collects information about the switch and the network.

This group contains the following: a description of the system, the name of the organization or enterprise, the system up time, the contact person for the system, the system's name and location, and services for the system.

Interface Group

The Interface group collects information about the interface for the system.

This group contains the following: fields that describe the network interfaces and list the system's physical address, description, type, size, bandwidth, operational status, uptime at last change, out queue length, MIB definitions, administrative status of the system, and various input and output data.

Address Trans Group

The Address Translation group collects information about the capability to translate physical and network IP addresses.

This group contains the following items: interface index, physical address, and network address for the MIB.

IP Group

The IP group contains information about the Internet Protocol functions for the selected network object.

This group contains the following items: fields for forwarding and the default time-to-live for the system. Fields for monitoring input and output data, reassembles and fragments are also displayed.

IP Address Table

The IP Address Table group contains fields for the Internet Protocol address, interface, net mask, broadcast address and maximum reassembly size for the system.

IP Routing Table

The IP Routing Table group collects the system's destination Internet Protocol address, interface, primary and alternate routing metrics, next hop, and the following data for route: type, discovery, age, and mask. MIB definitions are also included. (IP routing is a function of the Internet Protocol that directs outgoing message packets to the correct destination nodes.)

IP Address Translation Table

The IP Address Translation Table group contains fields for interface, physical address, IP address and translation type for the system.

ICMP Group

The ICMP (Internet Control Message Protocol) group contains information for monitoring input and output data for ICMP.

TCP Group

The TCP group contains information that relates to Transmission Control Protocol, such as algorithm, minimum and maximum for retransmission time-outs, monitoring connections, failures, established resets, input and output data, and retransmitted segments.

TCP Connection Table

The TCP Connection Table group contains data about each TCP connection, with a field for the state of the connection and fields for the local IP address, local port, remote IP address and remote port.

UDP Group

The UDP group contains data about the User Datagram Protocol, which is used for connectionless transport services. This group contains the following items: fields for monitoring input and output data related to UDP.

UDP Listener Table

The UDP Listener Table group contains data about the User (or Un-numbered) Datagram Protocol agent for the system. This group contains the following items: fields that list the local IP address and local port for each listener.

SNMP Group

The SNMP group contains data related to the protocol used to manage and monitor nodes on a network.

This group contains the following: field for listing for authentication traps for the system and fields for monitoring input and output data used by SNMP to manage and monitor nodes on a network.

Supported MIBs

**Bridge MIB
(1493)** The IntraSwitch supports the following Bridge MIB group:
Base Port
The Base Port group enables and disables ports.

Technical Specifications

Network Management Platforms Supported

- o SNMP-compatible management software
- o HTTP management software
- o Telnet software

LEDs

- o 100Mbps operation
- o Maximum Utilization
- o Full Duplex/Collision
- o Data
- o Link
- o Power

Connectors

- o RS-232 (DB-9, female)
- o RJ-45 (10Base-T, 10/100Base-TX)
- o MII (Media Independent Interface)

Spanning Tree Support

- o IEEE 802.1d

MAC Address Table Size

- o 1024

Dimensions

- o Width: 17.1 inches (434.3 mm)
- o Height: 2.25 inches (57.2 mm)
- o Depth: 14.5 inches (368.3 mm)

Technical Specifications

Weight

- o 11 pounds (5 kg)

Power Specifications

- o Voltage range: 100 to 240 VAC
- o Frequency range: 60/50 Hz
- o Maximum current: 1.6 A

Environmental Specifications

- o Temperature: 0° to 45° C
- o Relative Humidity: 5% to 85% non-condensing

Standards Compliance

- o MIB II
- o RMON (4 groups)
- o BootP
- o DHCP
- o IEEE802.3u
- o IEEE802.1d
- o Safety: UL, CSA, VDE, TUV
- o FCC Class B, CE Class B

Mounting Options

- o Rack Mounting: standard 19-inch rack
- o Desktop/Free-standing

Redundant Power Supply

- o Compatible with Asanté's RPSU 6000 (part number 99-00454-07) [sold separately]

Management Menu Tree



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